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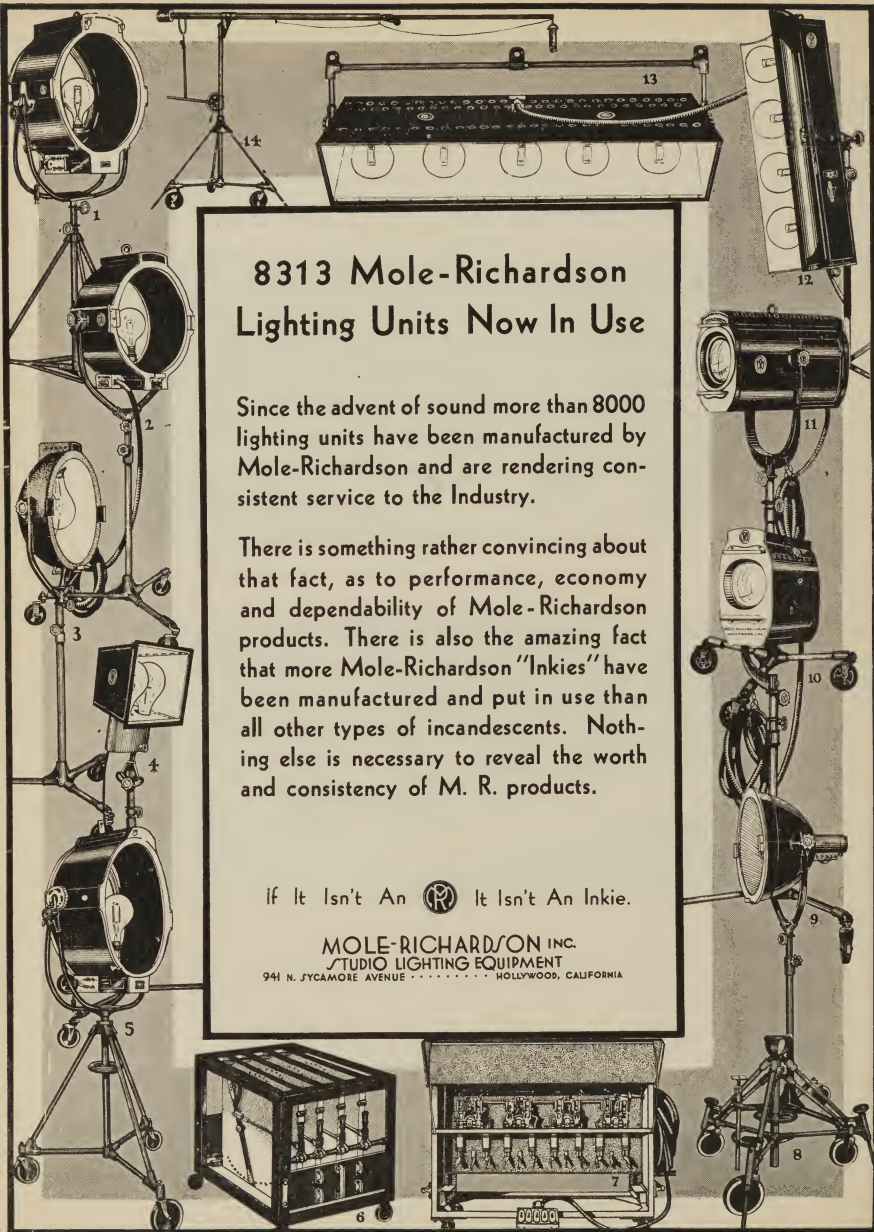
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A Technical and Educational Publication, Espousing Progress and Art in Motion Picture Photography

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EMERY HUSE  
Technical Editor, A. S. C.

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A scene from "Morocco," a Paramount Picture.

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# CINEMA CAMERAMAN

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VOL. I. NO. 1

LOS ANGELES, CALIFORNIA, NOVEMBER 1, 1920

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### OUR BILLION DOLLAR FILM INDUSTRY

**Motion Picture Making Attracts Notable People to Los Angeles and Southern California—Important Developments in Evidence in All Studios.**

Los Angeles is steadily forging ahead as the greatest of all motion picture producing centers of the world. Millions of dollars are being paid out annually in salaries and operating expenses by companies located in this city, and prominent writers familiar with the subject, state that about 80 per cent of the motion pictures made in America are made in Los Angeles.

This means much to the cinematographers—the men who make the motion pictures. It means that the reliable cameramen of executive and general business ability who know how to correctly photograph motion pictures have a bright and interesting future. But they must work and establish their own identity through original photography while co-operating at all times with their directors.

There is the reason why the members of the American Society of Cinematographers are steadily expanding with the growth and prestige of the industry. These alert, tireless, energetic men of the camera believe in progress along educational lines because they realize their future is in the making. As the motion picture industry grows in importance their work is sure to win that substantial recognition that places them on a par with the director. The cinematographer is in a large measure responsible for the perfect picture, and no matter what ability the star may possess, nor how well the director directs, unless his cameraman knows his business the picture proves a costly failure. The cinematographer is largely responsible for the achievements of the billion dollar industry.

### APPRECIATIVE RECOGNITION

It is most pleasing to representative cinematographers to note the feeling of recognition and appreciation of their efforts to aid in producing the highest quality photographic effects in motion pictures. The representative and intelligent directors and heads of producing organizations, stars and players, depend much upon the cameramen. A fitting testimonial to the ability of most of the cameramen is shown on the screens of pictures of note by the presence thereon following the name of the director, of the name of the cameraman photographing the picture. The recognition of the cinematographer evidences upon their mind. It shows the director who is proud of his own achievements who is willing to share honors with his cameraman, and it is the men of this class who create the most notable successes in motion pictures.

## THE CAMERAMAN

The man who works the camera must be a thoroughly decent fellow or else he could not hold his position, as he has much to contend with and much is laid upon his unhappy head which should be blamed elsewhere—faulty direction, faulty chemicals, or faulty work in the dark room.

The importance of the cameraman is paramount. Without him no good picture can be taken. He must be a many-sided individual to continue in his position successfully. He must, first of all, be able to take good pictures, apart from that, he must necessarily be a brave man and ready to attempt anything asked of him. He must be clear-headed, so that he can stand on the edge of a skyscraper, and lean over the top of a precipice, for that matter. He must perch himself in almost incredible angles, and perhaps stand waist deep in the river or ocean. He must stand steadily by his work when some wild beast comes menacingly close, when the other members of the party can run to shelter, and all the while he must steadily crank, and see that his camera is not injured by fire, animals or water, and it is a matter of record that very violent deeds are performed by the cameramen, deeds that few actors or directors care to brave.

The average cameraman is a fatalist and a stoic, and he must have the temper of a saint, for the best of directors are irritable at times, and even cameramen are liable to mistakes, liable to start on a scene without enough film in the box, liable at times to be out of focus, for he has many, many things to think about, and he has to think quickly and to be prepared for emergencies.

The modern cameraman is for the most part a silent individual; he is more or less prosopopeic in his work, and has not much time to mix with the players. He has to prepare his camera and magazines in the early morning, and when he returns from the day's work he is occupied with seeing results, so that if there are any retakes, the company may be ready to remake the scenes the following day. By the time he is through with his work he is ready to leave and stay there, for he needs all the rest and sleep he can get as a rule, as he knows he cannot afford to allow such things as nerves to attack themselves to his system. The cameraman leaves little things like that to the players and the directors, and endeavors to go his own way serenely.

The man who works the camera must necessarily be a student, otherwise he will fall into a rut, and then—oblivion. There is so much excellent photography today, and so many new effects being thought of, that a conscientious man is forever thinking of some new and startling effect or innovation—something new, of which he may be proud, and yet he knows that his name is not likely to be mentioned when something particularly new, even of his own creation, is shown on the screen. It is content that it is the child of his brain, and that his fellows of the camera know of his feat.

The cameraman is slowly, surely, coming into his own as screen developments attest his worth.

### CINEMA CAMERAMEN IN THE FIELDS OF ACTION

**News Notes of Current Events in the Studios Where the Films Are in the Making—Mention of Recent Releases.**

The season of 1920-1921 with the members of the American Society of Cinematographers promises to be unusually active and interesting, with several remarkable productions in the making that should establish new precedents for the film industry.

Mr. Charles G. Rosher, cinematographer for Mary Pickford, is in the midst of production photographing modern Italian scenes for Miss Pickford's new six-reel picture, "The Flame in the Dark," directed by Frances Marion.

Mr. Philip E. Rosen, who is directing Metro productions, recently finished the picture "White Ashes," an all-star cast being featured. This story is by Luther Reed, written for the Metro. Mr. Rosen is now directing Mary Allison in that remarkable story entitled, "Are Wives to Blame," a picture that promises unusually interesting features.

Mr. King D. Gray, cinematographer with J. Grub Alexander, featuring Ben Wilson and Neven Gorbier in, "The Crimson Lady," a spectacular dramatic series of fifteen episodes, says this picture will rank among the modern thrillers as a very exciting serial. It will be completed about December 15th.

Mr. Ernest S. Depew, who is photographing "Slim" Sumner in and Babby Dunn, under the direction of Joe Bordeaux, in a big Manning comedy production, says the laugh lovers will receive full benefits when they look upon this film, now about ready for release.

Mr. Fred W. Jackman, who is in the midst of a remarkable series of comedy studies for a big Mack Sennett comedy wherein Ben Turpin and Charlie Murray are being starred, describes a number of camera effects more than usually out of the ordinary, covering special effects of all sorts and angles in this five-reel 1920 spell-binder.

(Continued on page 2)

### SOUTHERN CALIFORNIA IDEAL FOR PICTURES

Philip E. Rosen, president of the American Society of Cinematographers, and a director of all-star casts for the Metro organization, an authority on matters of photography in motion pictures, who has toured most of the interesting sections since establishing his home in Los Angeles about two years ago, is pronounced in his praise regarding the charming beauty of this wonderland of Southern California for moving pictures. He says:

"There is every evidence that the charming and alluring natural settings of Los Angeles, San Bernardino, Riverside, Redlands, the mountains and foothill districts tributary, and famed Catalina Island, which are embodied in moving pictures, are popular throughout the world."

"Through the great variety of scenery—forests, golden fruit orchards, mountains and marine perspectives, this country offers unusual advantages for the settings of moving picture scenarios, especially in the radiant days of the almost continuous summer months—and nearly all the year is summer in the Southland."

Alpine settings may be found in the snow and delicacies of Mt. Wilson and Old Baldy, only a few miles away; the great sweeping beaches of the Santa Monica Bay, Redondo and San Pedro, with Catalina Island in the nearby distance, offer most fitting surroundings for the activities of shipwrecked sailors, pirates, fishing scenes, shipping and sea-side romances. Farm life, with the old homesteads, and the mystery of the foothills, cactus and sage brush, all furnish the common and uncommon needs of the scenarios.

"These great advantages have led to a new industrialism in Southern California, moving picture studios and manufacturing plants have been erected in many places, and what the neighborhood has to give to the pictures in perfect surroundings will be returned in commercial profits, the time having come when even the still life of natural beauties can be a source of profit."

"The vast pictures have been enhanced, and while people all over the world are being made acquainted with the beauties of Los Angeles and the attractive regions surrounding, the pictures themselves are being improved a hundred fold because of the superior and real nature of the background. Nature and man are thus forming a splendid and educational partnership as told by the cameras of our cinematographers."

### BUILDING IMPROVEMENTS

Many substantial and representative improvements are being made by the film manufacturing and producing industry around Los Angeles giving evidence of the growth and importance of this great industry where in millions of dollars are invested.

# TEN YEARS of PROGRESS

by HAL MOHR, President, American Society of Cinematographers

TEN YEARS ago this month a little, four-page, semi-monthly paper, devoted to the interests of Cinematographers and Cinematography, made its initial appearance in Hollywood. Nothing pretentious—just four pages nine by fourteen inches—telling the latest developments in cinematography. This little paper, whose front page is pictured opposite, was called "The American Cinematographer," and was published by the American Society of Cinematographers, Inc. The first issue appeared on November first. At the time there was no thought in the minds of those who started it that this paper some day was to become the outstanding magazine devoted to Cinematography, professional and amateur, and to practically all other technical matters pertaining to the making of pictures.

Gradually, the little paper grew until it was decided that it be changed into a magazine. Its influence was being felt throughout the picture industry. Then it became a monthly and took its place at the head of the magazines pertaining to the cinematographic field. Its reputation spread to Germany, England, France—and as interest in motion pictures spread, it followed until today it is read in every state in the Union and in thirty-six foreign countries. From a four-page paper it has grown into a fifty-four page magazine that is eagerly looked for by thousands of readers all over the world. And—within the next few months it will again expand in size and before another year is expected to contain close to one hundred pages of instructive material each month.

As the picture business developed and changed, so has the magazine. When sound came into existence this magazine was one of the first to give to its readers the latest technical developments along these lines. As the 16 millimeter camera and home projectors grew in favor and the home movie makers were seeking information from those who, by experience in the professional field, could intelligently help, this magazine introduced a department devoted to these amateurs which has won popular favor and is steadily growing and making its influence felt.

Now the magazine is celebrating its tenth anniversary. And—it is doing it in the same manner it has grown during the years—quietly and without splurge or blazing trumpets. We are not asking our advertisers to spend money for additional pages in which to congratulate us on our growth. It has been the loyal support of these advertisers that has made possible our growth. In the early days when our circulation was very small some of these advertisers who are still with us showed the faith of pioneers by placing their advertising with us. We take this opportunity of thanking them. Today we know we are giving tremendous value to our advertisers, and we are happy because their faith was not misplaced.

Tremendous strides ahead are being planned for the coming year and we want to assure every reader that no stone will be left unturned in an effort to make this magazine remain at the head of the field of its kind. New departments are to be created in the near future which will be announced from time to time. We will be pleased to hear from any of our readers who care to make suggestions as to editorial content or features which they feel may make the magazine of still greater worth. As we start our eleventh year we again thank all of you who have grown with us, and express the hope that both the magazine and you will enjoy as much prosperity in the next ten years as in the past.

# Color Correction

In the "Cooke," "Speed Panchro" and "Panchro" Lenses

by JOSEPH A. DUBRAY, A. S. C.

(NOTE.—This article was suggested to the author by an informal discussion between him and Mr. A. Warmisham, Optical Director of Taylor-Taylor-Hobson, the makers of the "Cooke" Lenses.

Color correction for cinematographic lenses has been, for the last two or three years, the subject of continued discussion in the cinematographic world.

The exigencies of talking pictures and the definite adoption by the Motion Picture Industry of Panchromatic Films have dictated to Mr. Warmisham the necessity of supplementing his laboratory research with a thorough survey of the production fields of Hollywood, New York and Europe.

His investigation resulted in the offering to the cinematographic world of the new series of F 2, "Speed Panchro" and F 2.5 "Panchro" Cinematographic lenses, which have been designed by H. W. Lee of Taylor-Taylor-Hobson.

The author offers the following essay to the consideration of the Cinematographers and Technicians of the screen in an effort to generalize a clearer understanding of the factors involved in the correction of the chromatic aberrations in modern Cinematographic lenses of wide aperture.—The Author.)

The analysis of the ray's paths and their position in the image area permit the optician to accurately determine the remaining aberrations and therefore to modify the design of the system so as to obtain the greatest possible "correction" without altering the predetermined lens aperture.

The aberrations which are inherent with an optical system the elements of which are bounded by spherical surfaces are: SPHERICAL ABERRATION, COMA, ASTIGMATISM, DISTORTION, CURVATURE OF FIELD, CHROMATIC ABERRATION.

These are further complicated by secondary aberrations which may be considered as subsequent errors of the same order as their primaries.

The errors due to aberrations cannot be fully eliminated or, to use the common expression, they cannot be fully "corrected" and a photographic lens is, therefore, at its best but a compromise.

The magnitude of the errors which remain in the finished objective is decided upon by the designer according to the use for which the lens is being created.

The optician is constantly confronting a long series of arduous problems which are created by the fact that the means adopted for correcting one error may produce errors of a different order and, therefore, his ingenuity, coupled with his knowledge of the conditions under which the lens is to be used are the determining factors in regard to the suitability of the finished instrument.

IN THE computation of photographic lenses, the optical designer traces step by step the path of a selected group of light rays through the system of lenses which he has, at first, rather roughly selected as nearly answering the requirements necessary for the lens to be suitable for the special purpose for which it is designed.

For Cinematographic Lenses, it may be stated that the ultimate goal of the optician is to minimize the effects of the various aberrations which are inherent with the physical properties of glass and at the same time reach the maximum possible luminosity or speed.

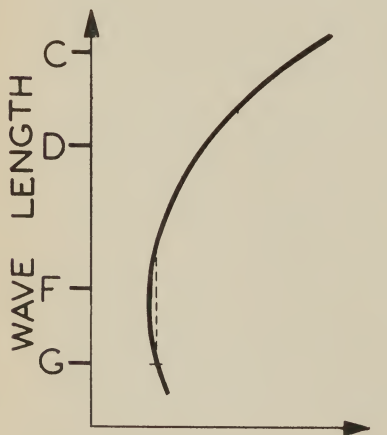


FIG. 1

FIG. 1. Relation between wave lengths and focusing distances for a refracting telescope, designed for photographic use.

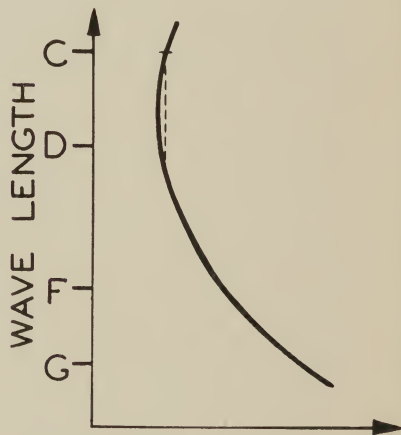


FIG. 2

FIG. 2. Relation between wave lengths and focusing distances for a refracting telescope designed for visual observation.



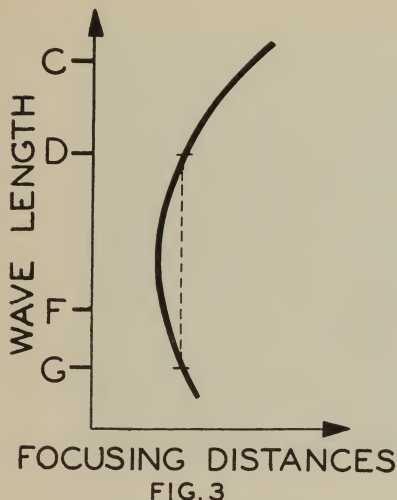


FIG. 3. The D G curve of the secondary spectrum in lenses in use in pre-achromatic times.

It is to be especially noted that the types of lenses which are best adapted to reduce the Chromatic aberration to a minimum, are the worst offenders in respect of curvature of field and astigmatism corrections, and it is literally true that the aperture and the quality of the color correction are both limited by the necessity of producing a flat field.

Since this article is intended to briefly discuss the correction of the chromatic aberrations for lenses as developed for cinematographic work, we shall disregard all other aberrations and construe that the optical system under consideration is exempt of all errors but those introduced through the impossibility for modern high speed photographic lenses to focus accurately in the same plane all the various color images.

This deficiency is, as stated above, entirely independent from conception of design or workmanship and is inherent with the physical properties of glass.

The index of refraction of every single piece of glass, varies for all the lights of different color and thus, if a single piece of glass is ground and polished in the shape of converging lens, its power of convergence varies for the different colored rays. Since the convergence of the blue rays is greater than that of the red rays, the single lens will have a shorter focal length for the former than for the latter.

If the differences between the refractions for the various colored rays, which phenomenon is called "dispersion," were proportional to the refraction for all glasses, there would be no remedy for chromatic aberration.

However, the ratio of refraction to dispersion varies for glasses of different composition and density and if two glasses are chosen, one having a high refraction for low dispersion and the other a low refraction for the same dispersion and from them two lenses are made, one positive or convergent and the other negative or divergent which combined form a positive whole, it is quite evident that such combination can be designed in which the chromatic errors of one lens are neutralized by the similar but opposite errors of the other

resulting in a combination reasonably free from chromatic aberration.

Such lenses are called ACHROMATIC.

It must be borne in mind, however, that "dispersion" is not a finite entity, which can be fully expressed with numerical mathematical exactness and since it only expresses an infinite number of differences between the refractions for the various colored rays it is confined to express a mean between them, or between two chosen colors.

Dispersion for a certain glass is usually determined by subtracting the refracting index of the colored light corresponding to the "F" line (Blue-Green) of the spectrum from that of the "C" (Red line) the wave lengths of which are respectively 486.15 and 656.30 micro-millimeters.

When this mean dispersion is considered in the calculation of achromatic lenses, only these two colors will be accurately brought to the same focus while the others will fail to do so and cause therefore the existence of a residual aberration.

This phenomenon is known by opticians as the "Secondary Spectrum" effect.

Some reduction of the secondary spectrum effect is indeed obtained by bringing to the same focus three instead of two colored light rays, but this entails an increase in the number of glass surfaces and a reduction in the speed of the lens which is appropriate for some special work such as the trichrome reproduction of paintings and colored objects but which would be in opposition with the speed requisite of objectives for cinematographic work.

The only optical instrument in which opticians have succeeded in correcting the secondary spectrum is the "apochromatic" microscope objective and for this the correction has been made by substituting the crown glass which would ordinarily be used by a crystalline mineral, Fluorite.

This practice cannot, however, be extended to photographic objectives simply because Fluorite cannot be obtained in sufficiently large pieces of optical clear quality. For example, to make a 3" lens working at a maximum aperture of F 2.,

(Continued on Page 22)

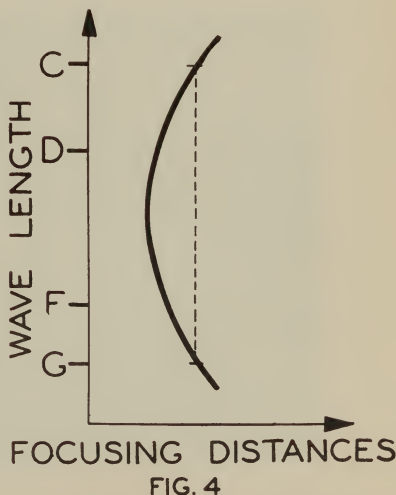


FIG. 4. Secondary spectrum curve illustrating the nearest possible compromise for coincident visual and photographic foci.



HARRY PERRY, A. S. C., has just returned from Hawaii, where he photographed some beautiful subjects in Multicolor. Some idea of the scenic beauty of his pictures may be obtained from the photographs on this and the opposite page. Above is the Grand Canyon of Hawaii, located on the island of Kanaai. This was admirable in Multicolor.



HERE is a view from the island of Kanai. You can wade out a half mile in this surf. Mr. Perry says it was an admirable subject for photographing in natural colors.



THIS is the crater of Haleakala, "House of the Sun," on the island of Maui. Mr. Perry and his company had to take camera equipment on pack mules to get this. "But it was well worth it," says Mr. Perry.



HOLD everything! Here is Mr. Perry, himself, snapped in a moment of fun, as he was doing a little rehearsing with a few good looking hula dancers. Who says these cinematographers' lives are all hard work!

# The Measurement of Density in Variable Density Sound Film

Communication No. 435 from the Kodak Research Laboratories. (Read before the Society of Motion Picture Engineers at Washington)

Reprinted from The Journal of the S. M. P. E.

by CLIFTON TUTTLE and J. W. McFARLANE

THE DEPENDENCE of the optical density of developed photographic materials upon the method of its measurement was first demonstrated by Callier.<sup>1</sup> He discussed the effect of light scattering by the photographic image and presented data which seemed to justify the empirical relation:

$$D|| = QD \perp ||$$

where  $D||$  (specular density) is the value obtained with the developed image in a specular beam,  $D \perp ||$  (diffuse density) the value obtained with diffuse illumination, and  $Q$  a constant factor greater than unity.

This form of relation holds with practical accuracy for many materials though it has since been shown by Bloch and Renwick<sup>2</sup> and by one of us<sup>3</sup> that an exponential relation fits the facts better over an extended density range for the data of Callier and for other data on a variety of materials. A theoretical relation involving optical constants of the grain clumps proposed by Silberstein and one of us,<sup>4</sup> finds excellent experimental justification, and if enough information regarding the optical characteristics of the developed image was available this relation could be applied to the solution of any practical problem.

## Density Measurements in Relation to Sound Pictures

In the theory of sound reproduction with the variable density method as outlined by MacKenzie,<sup>5</sup> Jones and Sandvik,<sup>6</sup> and others<sup>7</sup> the measurement of sound track density plays an important part, for it is from these measurements that the values of negative gamma, positive gamma, and the resultant over-all gamma are determined.

The value of density which is effective in the reproduction of the sound track is neither "diffuse" nor "specular" in the sense that these two terms have been used in the literature. So far as we are aware, there are no published data correlating "sound-reproducer" density with either of the aforementioned values. It may be of interest, therefore, to consider briefly the matter of density measurement in its relation to sound picture projection.

## Angular Distribution of Intensity from Positive Film Illuminated by Parallel Light

Because of the fact that the photographic image is a non-homogeneous material formed by clumps of metallic silver grains embedded in a matrix of gelatin, the light which is transmitted by the image is scattered by reflection and diffraction. Fig. 1 shows distribution curves for images developed on motion picture positive film. To obtain these curves, the sample was illuminated by approximately parallel light and the intensity distribution was read with a photometer mounted on a spectrometer arm so that it could be rotated about an axis passing through the image. The normally transmitted intensity is so much greater than the intensity a few degrees away from the normal that it is practical to show only a section of these curves in the graph.

At first glance, distribution curves, such as are illustrated in Fig. 1, may be misleading. The relative intensities even at

angles close to the normal are so small compared to the intensity of the specularly transmitted beam that one might feel justified in neglecting their effect. These curves are only cross section views of the distribution, and to get an accurate conception of the total amount of light scattered away from the normal, the intensity values given by the ordinates in Fig. 1 must be multiplied by an area factor which varies with the sine of the angle from the normal.

The following relation may be used to determine the total transmission from the angular distribution curves:

$$T_{\text{Total}} = 2\pi \int_0^{90^\circ} T \sin \theta \, d\theta$$

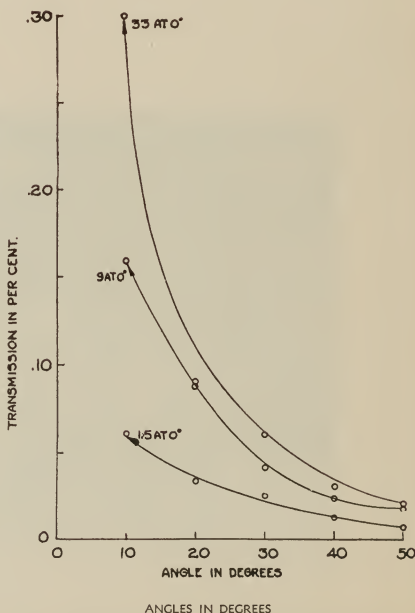


FIG. 1. Distribution of light scattered by positive film of different densities (expressed as per cent of normally incident light.)



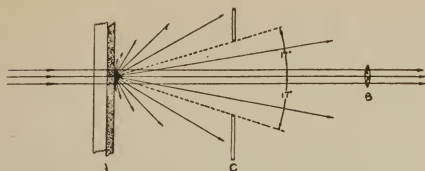


FIG. 2. Diagrammatic representation of light scattering by photographic density.

in which  $T^{\theta}$  is the average value of the ordinate over the increment,  $\Delta\theta$ . The same relation may, of course, be used to determine the effective value of transmission between limits fixed by the solid angle subtended at the measured sample by the window of the receiving element.

The significance of light scattering by the photographic deposit in the problem of density measurement may be made clear by reference to Fig. 2.

In this figure, parallel light, represented by arrows at the left, is incident upon the photographic density, A. The transmitted light is indicated vectorially by the arrows at the right of the figure. If a printing material is placed in contact with the illuminated sample, all of the transmitted light, regardless of direction,<sup>4</sup> is effective in exposing the positive material. A measurement of density, to be significant for contact printing, must therefore be based upon the total transmission, that is, it must include an angle of 90 degrees each way from the normal in Fig. 2. This value, which is spoken of as "diffuse density," is the value given by most of the commonly used densitometers.<sup>5</sup>

If the photographic deposit, A, is included in an optical system and is imaged by a lens (B, Fig. 2) which subtends a relatively small solid angle at A, most of the scattered light is lost and should not be included in a measurement of the transmission (or density) if a projection print is to be made of the image. Under these circumstances the specular value of density ( $D_{||}$ ) is nearer to the correct value.

In sound reproduction, with the sample illuminated by light from an optical system and with the transmitted intensity collected by the window of a photo-cell (represented diagrammatically by C in Fig. 2) a value intermediate between the diffuse and specular densities is effective.

#### Density Measurement Under Practical Conditions

Several factors may influence the value of density as measured by the photo-cell in the reproduction system. The degree of collimation of the incident beam of light, the uniformity of the sensitive surface of the photo-cell, the quality of the incident radiation, the spectral sensitivity of the photo-cell, and probably numerous other considerations may have some influence.

Under conditions which exist in practice, we believe these factors to be of small importance in comparison to the effect of altering the angle of the cone of transmitted light which

<sup>4</sup>The integrating densitometer,<sup>2</sup> in which the sample to be measured is placed over the window of an integrating sphere, and the most common type of densitometer, in which the sample is placed in contact with a diffusing opal glass, both give values of diffuse density in agreement with each other.



FIG. 3. Optical system used in density measurements.

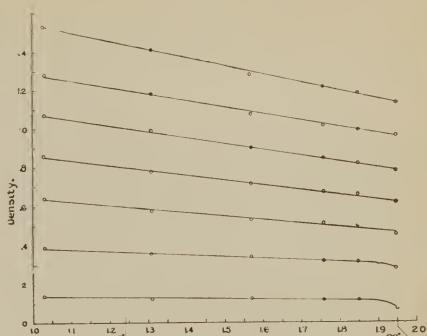


FIG. 4. Density of positive film image as measured by a photo-cell whose window subtends various solid angles at the measured sample. ( $\log_{10}$  of one-half of the solid angle is plotted.)

is collected by the photo-cell. It is nevertheless desirable to state as specifically as possible the conditions under which we have made our measurements.

Fig. 3 illustrates the optical system which was used to illuminate the sample with a slit image. This system was built up from standard parts and it duplicates the system which is actually used in many theatre installations. Most of the important dimensions are given in the figure. Both lenses, B and D, are of 10.5 mm. diameter and the solid angle subtended by the objective lens at the density, E, is 31 degrees.

A potassium photo-cell with a window 25 mm. in diameter was placed at various distances from the measured sample, thus altering the solid angle of the cone of light which was collected. Photo-current was measured with a Leeds and Northrup H. S. galvanometer calibrated with the cell over the intensity range actually employed.

A series of densities developed on Eastman positive film in M. P. 16 to a diffuse gamma of 2.0 was measured.

A typical set of data is shown graphically in Fig. 4 in which the measured values of density are plotted against  $\log_{10}$  of the half angle subtended by the window of the photo-cell at the sample. The lowest values of density,  $D_{||}$ , were obtained with the Capstaff-Purdy densitometer and are shown plotted at the abscissa =  $\log_{10} 90^\circ = 1.95$ .

In most of the reproducers used in theatres, the angle subtended by the photo-cell window at the film is about  $35^\circ$  ( $\log_{10}$  half angle = 1.54). The comparison between the value of diffuse density and the density actually measured by the photo-cell in the projector is given in Table I. For the lower densities the factorial difference between the two values is greater, which fact checks the previously reported data on positive film.<sup>3</sup> For practical purposes perhaps the Callier<sup>1</sup> type of relation:

$$D_r = 1.3D_{||}$$

in which  $D_r$  is the effective reproducer density, will hold with sufficient accuracy.

TABLE I

Relation between Diffuse Density and Reproducer Density for Positive Film

$D_h$	$D_n$	$D_h/D_n$
0.135	0.07	1.93
0.37	.28	1.32
.60	.45	1.33
.80	.62	1.25
1.01	.78	1.29
1.20	.97	1.24
1.44	1.14	1.26

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# S. M. P. E. Offers Film Ratio

Suggests Ratio of 1.8 to 1

**W**IDE FILM, the bugbear of producers for some time past, was presented to the Fall meeting of the Society of Motion Picture Engineers, held in New York, October 20th to 23rd, and the Society, through its committee on standards and nomenclature, added another problem to the sponsors of 70, 65 and other width films by suggesting a width somewhere between 35 mm. and 70 mm.

A. C. Hardy reported for the committee and stated that it had become increasingly evident to the committee during its deliberations that the adoption of release prints with a width in the neighborhood of 65 to 70 millimeters would be economically impracticable for a large proportion of theatres and that it seemed desirable to give consideration to a film size intermediate between these dimensions and the present 35 millimeters standard. "We are working on a layout that will permit the use of the 1.8 to 1 ratio," said Hardy, "and that will provide for a wider sound track and more suitable margins. We are attempting to assign dimensions to this film that will permit the most economic use of existing 35 millimeter equipment. While the specification of the release print dimensions is the problem of most importance this committee has under consideration a negative of such proportions that it may be printed by optical reduction on the new intermediate film size or by contact on a larger film for the deluxe houses. An agreement on the above plan has been reached so recently that there has been insufficient time to complete the final details for presentation to the Society."

It was pointed out that the wide film would have many obvious advantages over the present standard; such as a sound track of more satisfactory width; possibility of greater variety of composition and more action without exceeding a practical limit of magnification. It was also declared that the committee had been guided not alone by engineering principles, but by consideration of the costs to the industry of a new standard.

The meeting was one of the most successful yet held by this organization, with more than 300 members registered at the meeting. No effort had been spared by the committee in charge of the arrangements, and the meeting was a history-making event for the society.

An outstanding feature of the meeting was the reelection to the office of President of the society of J. I. Crabtree of the Eastman Kodak Company. Mr. Crabtree's year of office has been a decidedly successful one. Other officers named are: vice-president, W. C. Hubbard; secretary, J. H. Kurlander; treasurer, Herford T. Cowling, A. S. C., of the Eastman Kodak Company and a member of the Board of Editors of the American Cinematographer.

Among the other highlights of the meeting were the reports of the color and studio lighting committees and a wealth of interesting and highly instructive papers dealing with practically every phase of the picture industry. The lighting committee revealed that in studios where incandescent lighting has been largely used there has been a tendency during the past six months to increase the number of high intensity spots and sun arcs for floodlighting purposes. This has been made possible, the committee explains, by the efficient silencing devices which have been installed on direct current generating equipment and the arc lamps in the studios. The committee also stated that there has been considerable work done lately on the problem of utilizing photometric measuring devices in the studios, but little progress has been made in the practical application of these instruments.

The color committee explained that the Photocolor system, which had not been outlined in detail before to the society, uses a camera which photographs a pair of images in conjunction with special taking filters and an optical system employing the split beam method of photographing. The negative is printed upon a specially designed optical printer which prints the two respective images in registration upon duplitzed positive stock. The print is next transferred to the green processing room and receives the application of the blue-green complementary dye on the side containing the image from the red sensation negative. The print then receives the orange-red dye upon the image from the green sensation negative.

A new color process, the committee points out, is being introduced from Germany. It is known as "The New Color Process." This is claimed to be usable either for motion or still pictures. Mention was also made of the Herauld Color Process, in which a three-color sector wheel is rotated in front of the camera and the contact print negative is dye tinted so that each successive group of frames is tinted one of the primary colors. The three-color positive is then projected with a continuous projector. The method is said to suppress the chromatic flicker when projected at 24 frames per second; only spherical lenses are used in this projector.

The Horst System of Color Photography is described as taking three pictures simultaneously with three-color filters, using a prism system in the camera. In the positive, each frame carries three images, each corresponding to one of the color separation images of the negatives. This method is being sponsored in Great Britain by Universal Productions, Ltd.

Another system mentioned by the committee is the Magnachrome Film.

This system gives wide film sound and color. It is an additive method with many of the old features utilized, but designed to rid itself of color bombardment and color fringing.

This is accomplished by having the film pass through the normal projector at the standard speed of 90 feet a minute with, however, an intermittent movement, which operates with an 8 sided cam instead of the usual 4 sided cam. This gives 48 pictures a second of half the usual height, instead of 24 full frame pictures a second as is customary. At this speed of 48 changes a second, there is little or no color bombardment.

The negatives are preferably made by the film pack system. The only change in the camera is that it is fitted with a half size aperture gate and the normal speed of 24 pictures a second insures good exposures. Other methods of making the negatives may be used.

For the positives, the negatives which have been exposed as above described, are printed in sequence giving on projection a series of 48 pictures a second, with the sound at 90 feet a minute giving perfect reproduction. No fringing is discernible as the negatives have been made in pairs. In addition to this the film is tinted with alternate spaces of red and blue-green, so that after leaving the laboratory the films cannot be joined or run out of color.

No public demonstrations have been given although private exhibitions have brought forth economies. As the process has no toning, using black and white pictures and makes use of process in which the problems are familiar and well worked-out, the film can be introduced at low cost.

The above description covers much that has been done but, as many changes are being made, no demonstration will be given until the Spring meeting of the Society.

(Continued on Page 50)

# Screen Definition

by DR. L. M. DIETERICH

Consulting Engineer

THE OBJECT of this article is to acquaint the broad ranks of cameramen with **facts**, based upon the knowledge and experience of individual cinematographers and to combine this information with the results of optical and psychological research.

All of these de-facto results of experience and research have a distinct influence upon screen definition.

The author hopes that a study of this article by the aspiring cameraman may be of some assistance to him in his struggles on the road to success; he found that a number of cinematographers excel in the practical use and application of one or more of the practices herein analyzed, but that the knowledge of all of them is exceptional, whereas it should be universal for the best of the profession.

For the purpose of this study we must assume that we strive to impart to the screen picture the same definition as that which we see when we look at reality.

This assumption forces us immediately to a comparison between the optical characteristics of eye and lens, as far as definition results are concerned.

Definition as far as perceptible by the human eye when looking either at reality or a (screen) photograph, depends primarily upon the contrast between the visual elements or parts of the field or picture, on the white to black scale, including all visual parts of the color (spectrum) scale. This contrast perception is enhanced by the sharpness of the separation between such contrasting elements.

In the human eye the sharpness of the image depends, firstly, upon the optical exactness of the lens action, which has never

been definitely determined, and, secondly, upon the resolving power of the retina which, however, has been determined.

The actual sensory perception is governed by this resolving power, and can be most clearly expressed as follows:

At five inches distance, which is the shortest focus the normal human eye is capable of, the eye can visually separate two points one thousandth of an inch apart.

At a distance of 100 feet, therefore, the eye cannot see two points, however "contrasty" they may be to their background, which are closer together than about one-fourth inch, as two points, but as one point. In other words, details smaller than one-quarter inch cannot be seen as such at 100 feet distance.

The human eye, therefore, sees less and less actually existing details the farther the object is from the eye.

This maximum sharpness, however, is only produced upon a very small central part of the retina of about 8.5 mm. diameter, which is called the fovea (pit), Diagram 1, where the so-called "cones" or light sensitive nerve elements are directly exposed to the light impact and very much closer together than in other parts of the retina. Outside of this area the "cones" are covered with a fibrous or granular layer, which more or less absorbs the light and impairs the sharp focus. This arrangement, existing only in man (and the higher forms of apes), enables him to mentally concentrate on an object.

The area of sharp sight being so small, produces the involuntary scanning of an object (however small) by that minute pencil of sharp perception at an immeasurable speed, when we want to see more than a mere point of an object.

This necessary scanning has a peculiar influence upon the finally registered definition of the object or picture.

When our "sharp pencil" hits a point in the field, the eye produces, by instantaneous accommodation, a sharp retinal impression of this point. At the same instant, however, unsharp images of adjacent points are impressed upon the retina, such unsharpness increasing with the distance of such adjacent points, from the focus point by reason of out-of-focus conditions and reduced light transmission.

As it takes special training to be able to concentrate our sight and attention to a single "point" only, we always perceive in every-day use of our sight, by the well-known persistence of vision, a composite picture of sharp and unsharp impressions, producing that softness of a picture which has been and is the ideal definition the cameraman strives for, but which he has so far been able to only approach but not reach.

The reasons why he cannot reproduce natural vision in this respect are manifold.

Let us first consider some of the methods and means employed in modern photography which bear directly upon definition.

To be able to photograph requires primarily a photographic lens. The performances of the first photographic lenses were so poor, as far as balanced definition is concerned, that an increase of lens definition has been consistently striven for, has always been, and is today the ever receding goal of the lens designer, computer and manufacturer.

And yet definition characteristics have today reached a state of perfection which in many respects is unnecessarily over refined. This may sound ridiculous but is nevertheless a fact. Why?

Lens corrections, especially inside the central zones, have reached such a state of perfection that the optical image, pro-

(Continued on Page 24)

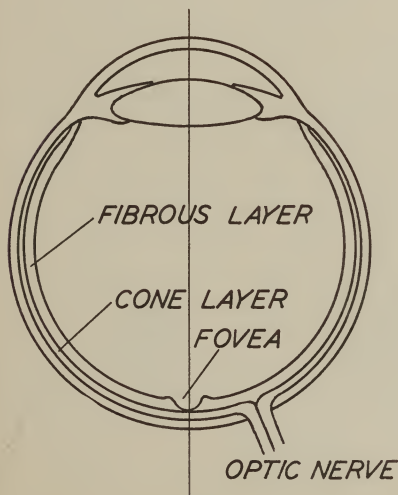


Diagram No. 1

# Hal Hall

says:

## Thank You!

THIS WRITER, who happens to be the editor of the Cinematographic Annual, which came off the press three months after it was promised, is simply overcome by the many wonderful things that his contemporaries have had to say about the Annual. And, if you will pardon the personal pronoun, I wish to take this opportunity to thank you editors of Camera, Camera Craft, Film Topics, Film Daily, Variety, Film Spectator and all the others for your worlds of praise. Honestly, we did try to produce a book that would be worthwhile and a credit to the Society which sponsored its publication, and if we have succeeded we feel that all is well, after all.

My excellent board of editors and I feared that perhaps we would be severely criticised. You know that adverse criticism is just about the easiest thing there is. We realized that perhaps we had overlooked many features that readers might want. And now to see the nice things that have been said about the book is really and truly most gratifying, and we do thank you, and hope all those who obtain the Annual will be pleased and receive much benefit therefrom. Next year we promise a better one—and it will be out on time.

## Color

AFTER a veritable orgy of color, in which producers and art directors apparently lost all sense of balance or good judgment, color has "taken one on the chin," as they say in the language of the prize ring. This is too bad, for color, judiciously used, is a real asset to a picture which naturally calls for color.

True to tradition, the producers have turned away from color in just as apparently silly way as they turned to it at the start of the great color period that has just ended. But color will not die out. Color is here to stay, despite the fact that the public has been fed up on a lot of very bad color, color which was splashed in just for the sake of making the picture colorful. Three intelligent papers were read on color at the recent S. M. P. E. meeting in New York, and a few producers are wisely figuring out that, if intelligently used, color will enhance a picture that calls for it. Take, for instance, the Eddie Cantor picture, "Whoopee." There is an example of what can be done with color if it is used wisely and the proper care taken in the making of the prints. Von Stroheim returned from abroad the other day, and had scarcely set foot on shore when he declared that color is needed in the ideal picture. His objection to color in the past has been that it has been unnatural. If a real three-color process can be developed and the producers can be influenced to use color only where it is called for, the future of color should be bright.

## Widies vs Pictures

THE WRITER is not a big producer, or anything like that. But—he sits back during these days of discussion of wide film, color and the like and wonders why a few more of the producers do not concentrate on the business of giving the dear public some PICTURES. Maybe said writer is all wet, as they say in the language of the street. But a few more good pictures would surely be much more comfortable both to the public and the box offices than so much discussion of whether they are to be on 50, 56, 65 or 70 millimeter film. We believe in advancement, of course. But while the scientific geniuses are figuring out the wide film problem, why not have a few good pictures on 35 millimeter film!

## Waiting for the Sunrise

FRANKLIN COURTNEY ELLIS, of the office of Public Information of the Eastman Kodak Company, deserves honorable mention for uniqueness of ideas along publicity lines. He writes ye Editor to the effect that Gene Lockhart, composer of "The World is Waiting for the Sunrise," has just bought himself a Cine-Kodak, and opines that perhaps now said Mr. Lockhart will be getting out of his downy cot in the morning and waiting to make a picture of said sunrise in Kodachrome. Oh, Mr. Ellis! But it got the Cine-Kodak and Eastman some publicity, anyway! Incidentally, did you notice what Brown did to Princeton the other week?

## Mr. Sherwood

ROBERT E. SHERWOOD, who is nationally known for his excellent movie criticisms and his pointed and intelligent remarks anent the picture business in general, recently gave us an article in his Bell Syndicate daily column that is well worth reprinting in any paper or magazine that deals with things pertaining to pictures. No comment is necessary—his article, excerpts from which we print below—speaks for itself:

"In the course of a post mortem on the late and generally lamented international yacht races, a London newspaper remarked that 'British seamanship was defeated by Yankee gadgets.' This referred, of course, to the fact that the 'Enterprise' used various mechanical labor-saving devices for the speedy raising and lowering of sails, whereas the 'Shamrock' relied exclusively on old-fashioned elbow grease.

"Precisely the same complaint is heard whenever the subject of American movie domination comes up for discussion in the European press (as it frequently does). Hollywood's position of leadership in the celluloid world is invariably attributed to the superiority of 'Yankee gadgets'—the sound recording apparatus being the greatest gadget of all.

"There is plenty of truth in this. For this development of the purely mechanical part of film production in Hollywood has become one of the major miracles of history. If only some of the other departments had kept pace with this development . . . but there is no point in indulging in depressing and fruitless speculation.

"Some time ago, when the screen was silent, a distinguished author returned from his first trip to Hollywood and announced the discovery that the cameramen there were far, far ahead of the directors, actors, scenario writers and executives in efficiency, intelligence, and general desirability. He didn't have to go to Hollywood to make this discovery. He could have attained it by visiting any movie theatre and looking at the results of Hollywood's labors.

"Now the cameraman co-operates with another kind of technician—the sound man—and he, too, has gone far ahead of the rest of the procession. If one-tenth of the genius that he expends in the manipulation of his complicated apparatus could be diverted and used in the preparation of stories . . . but again I'm wandering off into Utopia.

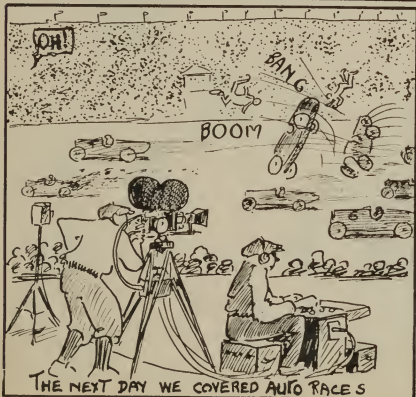
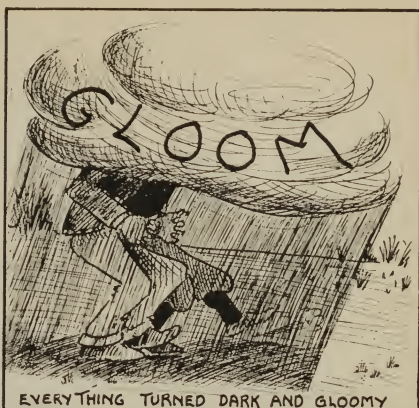
"There has been much talk lately of the dreadful mechanical Robot that is ruining Art in our modern civilization. Our finer aesthetic sensibilities, we are told, are being mangled in the ruthless cog-wheels of the Machine Age.

"Insofar as Hollywood is concerned, however, it is the Robot, the Spirit of the Gadget, that most nearly approaches that goal of perfection toward which all art strives.

"How often do we see pictures in which the technical qualities—the photography, sound reproduction, mechanical effects—are inferior to the flesh, the blood and the grey matter? Almost never. For an excellent example of just what I mean, have a look at 'Hell's Angels.'

"There is one thing seriously lacking in the Robot, and that is pride. He should be equipped with it at once, so that he will be able to stand on it and refuse to reproduce the drivel that is fed to him by the creative minds of Hollywood."





# A Letter from Hollywood

The Only Town Where Men Eat Off Their Beards

by JOE DOAKES

Illustrated by Bill Tara

**M**R. JOHN DOE,  
2945 Doe Street,  
Pittsburgh, Penn.

Dear John:

I promised to write you as soon as I reached Hollywood and had got myself settled in a good job in one of the studios. Well, I have been here four months, now, and am not settled yet. Some how or other, you can't get by the tough guys at these studio gates. They don't recognize talent and brains when it comes right up in front of them, so I am still on the outside, but am determined.

Now, as to Hollywood. Well, I don't know where to start. It is a great town, John. Big stars seem to figure that the best outdoor sport is trying to run down pedestrians with lavender colored, high-powered autos. And when they miss you and you yell at them they seem to take offense. They are funny that way. So far, they have all missed me, but I am afraid that they are getting the range, and if they do, don't bother sending me any flowers, for I won't know they have arrived. Anyhow, I understand that whoever hits you out here sends you all the flowers you need.

There is another funny thing out here. It is a group of men who eat off their beards. I'm not fooling, John. They sure do, and when they

don't eat off them they just don't eat, and that's a fact. No, I don't mean that they lay their beards out on the table and use them for table cloths. I mean that the beards furnish the eats. When I first arrived here I thought I had landed in a House of David Colony, honest, John. I walked down by Warner Brothers Studio the second day I was here, and it looked as though a half dozen of those David bearded ball teams were getting ready for a convention. Lined up by the curb

were several dozen of the funniest looking fellows. Long beards, short beards, bushy beards, French beards, Russian beards, Spanish beards, Egyptian beards—some looking as though they had been all night in the gutter; others looking as though they had just come from the cleaner.

I was curious about so much hair on the face, for you know we all used to shave on our street back home, and if a man didn't shave he was accused of being out the night before breaking the prohibition act. Not so here, however, I found out. You see, it is the only town in the world where men eat off their beards. And by that I mean that these guys find they can't get by the gates on brains and ability, so they let the whiskers grow and when they get enough to hide their identity they walk into the casting office, wave the beards and say, "Any Russian pictures today?"

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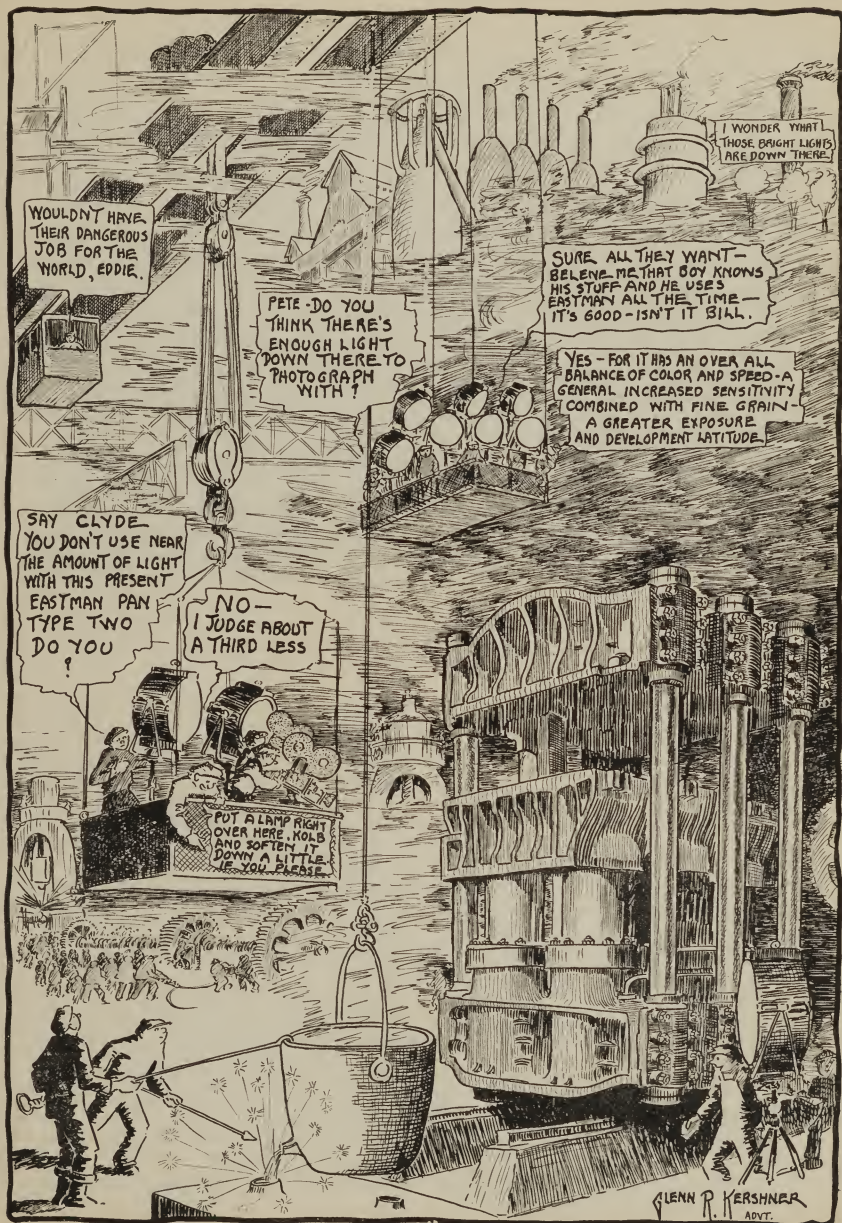


Some need to go to the cleaner



Lined up by the curb were the funniest looking fellows





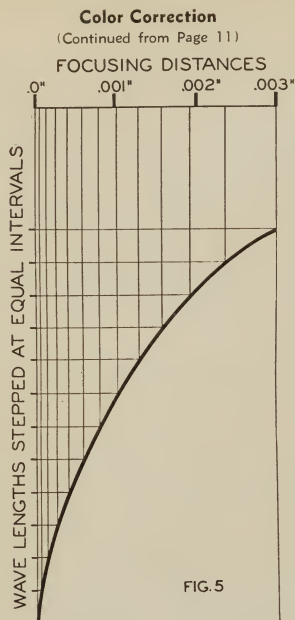


FIG. 5. Illustrating the dimensions involved in the secondary spectrum curve.

the optician would need pieces of Fluorite one-half inch thick and  $1\frac{1}{8}$ " in diameter, which pieces are absolutely unobtainable.

The designer of high speed lenses for the cinematographic camera has to provide reasonable definition over a wide range of the spectrum and the only materials he can use are known to be incapable of giving perfect results. His task is therefore to find some compromise which will give the required speed without making the secondary spectrum effect intolerably large.

An excellent illustration of the method of compromise usually adopted is to be found in the large refracting telescopes as used by astronomers. On account of the long focal lengths involved, which may be anything from 15 to 50 feet, the secondary spectrum effects in such lenses are very large, and the best compromise is to be found by bringing to the same focus two rays of colored light lying at close proximity to each other. Since photographic emulsions can be made which are sensitive to the blue and blue-green rays and are not affected by the yellows and reds, the spherical aberration for these lenses is corrected for the blue end of the spectrum only and the foci of the blue and the blue-green rays are made to coincide.

It results quite evident that since the visibility of the human eye is most keen for the yellow region of the spectrum, any attempt to focus such lenses visually, would result in utter failure in obtaining sharp pictures. The photographic focus is therefore found by trial exposures and once found is permanently located.

This is to be contrasted with the telescope of similar dimensions intended only for visual observation. In this case, the actinic rays of the Blue and Blue-Green regions of the spectrum

are ignored in favor of a strong concentration of focus in the region of the bright Red, the Yellow and the bright Green which colors are the most visible with the naked eye.

The graphs at Figures 1 and 2 show the relation between wave length, measured vertically, and focusing distance, measured horizontally, for both cases, since the dimensions involved are extremely small, in order to present them in a legible manner, the drawings have been traced schematically and the magnitude of the errors has been magnified. Also the conditions illustrated in the figure have been exaggerated and would not be met in practice in telescopic lenses, though Figure 2 illustrates the correct color distribution for a projection lens such as used in cinematography.

In Figure 1, the small departure of the curve at the lower end from the dotted vertical means that in this region the blues and blue-green rays are strongly concentrated in, or near the focal plane, and this is the position which practical tests would reveal as the plane for the best focus.

Figure 2 shows that the curve, though presenting the same characteristics as that in Figure 1, has been rotated to a different position, through appropriate and relatively simple modifications in the design of the objective. These optical modifications result in rolling the curve of the secondary spectrum along the vertical line without changing the curvature which is fixed by the abnormal refraction of glass.

The objective so constructed and the characteristics of which are shown in Figure 2, answers the requirements of visual observation, but could not be used for photographic purposes with the sensitive photographic materials. Red sensitive and panchromatic emulsions could only be used if their actinic to the blues is arrested by use of appropriate filters which would necessitate such an increase of exposure to render their use more impractical than the making of special objective for each purpose.

Now, it is quite logical to suppose that there is some intermediate position within these two extremes, where the secondary spectrum curve is not leaning forward as in Figure 1 or backward as in Figure 2 and this is the compromise photo-visual position which would be adopted if attempts were made to make the long focus telescopic objectives have coincident visual and photographic focus. The curve would then be rolled so that it would occupy the position shown at Figure 4, which represents the nearest possible compromise to this condition.

The great focal length of telescopic objectives precludes, however, the practical application of this compromise because the secondary spectrum errors are so large that extremely complex constructions are necessary to go only some way toward improving this defect.

It is for this reason and because the secondary spectrum cannot be accurately corrected that the largest telescopes are always of the reflecting type.

Photographic objectives as used for Cinematography, mainly differ from the telescopic objectives in that their focal length is much shorter and since the reduction scale proportionately reduces the actual magnitude of the chromatic errors, it is possible to construct them so that they will be found acceptable, while following the same principles of design as heretofore expressed.

In pre-panchromatic days when the use of ordinary and orthochromatic films was prevalent, a lens so designed that the secondary spectrum curve would be as illustrated in Figure 3, which is the D G curve almost universally adopted by opticians, was found satisfactory and it was indeed the best compromise obtainable, because of the lack of sensitivity of the photographic emulsions for the red rays and because of the quality of light used which was either unfiltered daylight or white-flame arcs.

But with the advent of Panchromatic films and the increased use of sources of light rich in red radiations, the long focus of the red light gave the well known lack of sharpness which is quite disturbing in all cases and decidedly detrimental in most of them.





CHIEF Cameraman Edward Snyder, A. S. C., and his crew gather at the only wet spot in the middle of the Painted Desert for a quaff or two during the filming of "The Painted Desert" in Arizona. Bill Boyd and Helen Twelveteares are featured in this new Pathe special.

Mr. A. Warmisham, Optical Director of Taylor-Taylor-Hobson, of England, makers of the famous "Cooke" lenses, was among the first to take a personal and progressive interest in the possibilities of improving the design of lenses for cinematographic work under the new conditions created by the stabilizing of the use of Panchromatic films and incandescent lighting.

The result of his investigation personally conducted in the Hollywood and New York production fields has been the designing of lenses the secondary spectrum curve of which has been rolled over as shown in Figure 4, that is to say, lenses which bring to the same focal plane the blue rays of the line G and the reds of the line C and which through a remarkable correction of all other aberrations outside of the chromatic are extremely suitable for photographing with filtered or unfiltered daylight or with arc or incandescent lights as well. These lenses, which have been appropriately named "Speed Panchros," present the best compromise which can be reached today in correcting the chromatic aberrations.

In order to illustrate the dimensions involved, we may mention that the depth of the arc illustrated in Figure 4, between the lines C and G on a 3" F 2. Speed Panchro lens, is three thousandths of an inch. This does not mean, however, that there is an uncertainty in the placing of the focal plane of that amount. This figure is obtained by critically measuring the differences in focal length on a color testing bench especially designed for the purpose and which disregards the limited resolving power of the eye as well as that of the photographic emulsions. In actual practice the uncertainty of focus is shown by photographic tests, to be somewhat less than one thousandth of an inch.

One reason for this difference in the computation of the magnitude of the error is also shown in Figure 5. The secondary spectrum curve has been plotted as focusing distances against wave lengths stepped off at equal intervals. These, projected onto the horizontal, plainly show that the illumination is much more concentrated at the left hand end of the focusing distances making it quite feasible that the uncertainty of focus is confined between 0 and .001" rather than between 0 and .003".

In addition to the visual measurements of color correction taken through the use of the color testing optical bench, each lens is tested photographically in the following manner:

A piece of white board is ruled with equidistant black lines. This board is set in front of the lens to be tested, at an angle of 45° and is photographed on panchromatic film, illuminating it first with incandescent lights, second with white-flame carbon arcs and third, with mercury-arcs. The object is focused visually and after processing, the film is carefully examined to ascertain if the lines which present perfect definition coincide in each of the three tests.

## Catholic Film Congress

THE THIRD French Catholic Film Congress will be held in Paris from November 4, to 6, inclusive, under the presidency of Cardinal Verdier. Among the questions to be discussed at this Congress are "the talking picture," and "the child in the motion picture theatre."



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(It is well to note that film made by this camera may be run on any intermittent projector.)

Those interested in the Moreno-Snyder cameras and projectors, both professional and amateur models, will take note that conversations regarding these instruments and machines may be arranged for by mail, to take place after the first of November, 1930.

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THE Boothe Company Aluminum contest in which \$200 in cash prizes will be awarded for the three most original and useful devices for use in connection with the motion picture industry—and which must be made from aluminum or an aluminum alloy, is rapidly taking hold among the mechanical men of Hollywood.

There is still a lot of time for the rest of you mechanical wizards to get started and catch up, and lead the field in at the home stretch. If you have had an idea floating around in the back of your head for some time regarding some particular device that could be made lighter and stronger if made of aluminum or an aluminum alloy, get busy and make a model and join the crowd who are working hard right now on models for this contest.

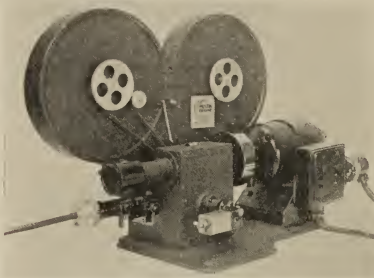
There are many men in the studios who should be able to cash in on this contest. But—you amateurs away from the city of motion pictures have an equally good chance. Put that idea into being right now. \$100 for first award; \$60 for second, and \$40 for third are the prizes. And there could be no easier or pleasanter way to pick up that amount of money than by enjoying yourself making a model that, in addition to winning a prize, might lead you into realms that you would never dream of. This is your opportunity to get your idea in the public eye. Some men try for years to get the attention of manufacturers after they have worked out some new device. Now you are invited to bring in your devices, and if they are good get paid for them. The contest has three more months to run. Let us hear from you, and if you have any questions to ask, send them to the Boothe Company, whose address is on the opposite page, or send them to the office of the American Cinematographer.

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1. The BOOTHE COMPANY, ALUMINUM MODEL—CASH PRIZE CONTEST begins with this issue of the AMERICAN CINEMATOGRAPHER and ends at midnight of January 15th, 1931. Winners' names will be announced in the February number of this magazine. It is not necessary to be a subscriber to this periodical in order to compete.
2. Cash awards of \$100—\$60—and \$40—representing first, second and third prizes will be given by BOOTHE COMPANY to the three contestants whose models, in the opinion of the judges are considered best adapted to practical and beneficial use in the production of motion pictures. Contestants, in case of a tie, will receive like awards.
3. Anyone associated with motion picture work may compete—amateurs as well as professionals. This also means all motion picture studio or motion picture theatre employees, or any organization whose products are used in motion picture work, except those in any way associated with the BOOTHE COMPANY or any other organization handling aluminum or aluminum alloys.
4. The judges, whose names are announced in this issue of the AMERICAN CINEMATOGRAPHER, are representatives of various branches of the motion picture industry. Their decision will be final.
5. Two photographs, a front and side view, with a description of the completed product, must be sent to "The BOOTHE COMPANY ALUMINUM CONTEST Editor," 1222 Guaranty Building, Hollywood, on or before January 15th, 1931. Be sure that this is accompanied by your name and address. No communications regarding this contest will be answered, unless accompanied by a self-addressed, stamped envelope. In no instance shall entries be sent until such request is made by the judges. Products must be made from aluminum or aluminum alloys. They may be wholly of aluminum or aluminum alloys, or may represent not less than seventy-five percent of these metals by weight. They may represent in their entirety a product useful to the motion picture industry, or may be a part, attachment or accessory to be used on some apparatus, machine or structure now employed.

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### Screen Definition

(Continued from Page 24)

definition of the five lines, but a gradually decreasing contrast of background. It is clearly seen how the significant relative form, characteristic of these five wires sharp lines, is gradually destroyed by lack of contrast.

The skilled cinematographer is well aware of these conditions and he has at present for their control, three technical elements at his disposition.

1. Lighting or selection of illumination is of prime importance, because it is of the greatest influence upon

2. Contrast, which, however, is also influenced by

3. Lens definition.

Illumination, he has pretty well under control, but definition only partly.

As far as lens action is concerned, the picture is either in focus or out of focus, or in other words it is either wire-sharp or "fuzzy." Trying to eliminate wires sharpness by focus control simply shifts the attention from the main object, thereby destroying the dramatic qualities of the picture. Lens manufacturers, realizing these conditions, endeavored to produce so called soft lenses, which, however, are only of very limited satisfactory application, because the degree of softness or sharpness cannot be quickly changed without destroying the all important depth of focus or its proper placement in the field.

There is another optical means, the optical engineer has furnished to the cameraman—the diffusion disc.

There are very few optically correct diffusion discs. Generally they produce not an even softening of the picture over the whole field as excelled in by the human eye and approximated by so-called soft lenses, but place in the picture, more or less overlapping spots or areas of distortions, by no means enhancing the photographic quality of the picture. They are, nevertheless, better means of preventing wires sharpness of the main object, simply because so called diffusion does not influence depth of focus nor does it shift the center of attraction.

It must furthermore be realized that the scanning action of the human eye maintains by its instant accommodation or focus change a balance of definition over the whole width and depth of the field, thereby producing a composite nerve image which we are used to, which we call natural vision of reality and which we expect to see on the screen. Plainly expressed, we want to see on the screen an even, soft definition of all objects in the field, wherever they are located in the width of the picture or in apparent distance.

All modern motion picture equipment, however up-to-date, only produces screen pictures, the definition of which is uneven or unbalanced or unnatural.

The illusion of natural balance of definition can only be approximated, because the cameraman's equipment can neither produce a picture composed of sharp and unsharp definition of details, nor a naturally balanced definition for all visible object distances.

In scanning a motion picture image there is no possibility of improving an out of focus picture element by accommodation, and the softening effect of such scanning action cannot produce such total balance we are used to in contemplation of reality.

So far only lens definition, resolving power of film emulsion and illumination contrasts have been partly analyzed in their influence upon screen definition.

A further analysis on hand of test photographs and the consideration of a number of other factors, influencing retinal and screen definition will follow in future articles.

Ed. Note: This is the first of a series of articles by Dr. Dieterich. Watch for the next one in the December issue.

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## New Sound System Features Magnetic Record on Celluloid Film

FOR the past five decades there has continually been a considerable amount of research work carried on in the field of sound recording, but since the advent of the talking picture, this activity has greatly increased and broadened. As far as motion picture phonography is concerned, two main courses of experiment have been pursued. The first of these is the obvious one of improving the existing methods and apparatus; the second is that of devising new systems which may be free from the many admitted failings of the accepted film and disc processes.

Two of the newer, experimental methods which have received the most attention have been those which recorded the sound by means of varying magnetic charges upon a steel wire or ribbon (as in the Still Process), and those which sought to engrave a sound record in the body of the celluloid film upon which the picture is photographed (as in the newly announced Spoor Process.)

From our French contemporary, LE CINEOPSE, we learn that a new process has been developed, which combines these two recording methods. LE CINEOPSE describes this process as follows:

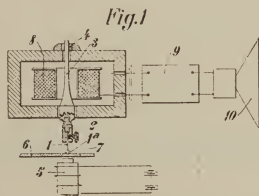


Fig. 1

FIG. 1. Schematic diagram of Nublat magnetic reproducer. 1. Magnetic metal shank which picks up the sound vibrations. 1-a. The end of the shank remaining at all times at a distance sufficient to permit the passage of the film without friction, and consequently without wear. 2. Non-magnetic housing. 3. Second shank modifying the strength and direction of the current flowing through the coil (8). 4. Rubber block. 5. Electromagnet. 6. 7. Film, and phonographic groove. 8. Coil influenced by the magnetic current which induces an electromagnetic current modulated according to the phonographic record. 9. Amplifier. 10. Loudspeaker.

FIG. 2. Line drawing of Nublat sound-on-film recording, showing (6), the phonographic record formed by a deposit of magnetic material incrusting in the film.



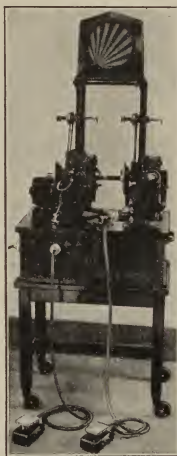
"A new method of recording and reproducing sound, said to be of the greatest resonance, has just been developed by a Frenchman, M. Nublat, and a company for its exploitation has been incorporated with a capitalization of several million francs.

"M. Nublat has completely changed the old methods of sound-on-film recording, to the great advantage of the exhibitor, who will no longer have to pay the heavy tribute exacted by the monopolies controlling the recording processes now in use.

"The recorder is of such simplicity that its operation cannot be in any way interfered with, and its installation in the studio will be no more expensive than the cost of a first-class camera.

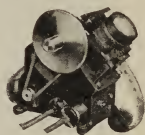
"The reproducer is likewise of astonishing simplicity. In

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the new principle of this apparatus, the photo-electric cell is entirely done away with, and with it, naturally, all its numerous inconveniences. It utilizes in the more or less conventional manner, a moveable shank of magnetic metal, placed in a field such that, proportionally with the movement of the film, upon which is a phonographic groove of magnetic properties, the shank follows the recorded vibrations, as it invariably follows the path of least resistance to the magnetic circuit, and this without any friction upon the film-record. The superiority of such a system is evident. The phonographic groove of the film passing at normal speed between an electromagnet and a shank which transmits the sounds to the pick-up, thence to the amplifiers, and loud-speakers, explains a purity of tone superior to that of the best disc recordings, due to the elimination of all friction, and therefore of all surface-noise. This also means the absolute elimination of the photo-electric cell, of its exciting-battery, lamps, etc., of the maintenance of these invariably delicate units, and their high first cost.

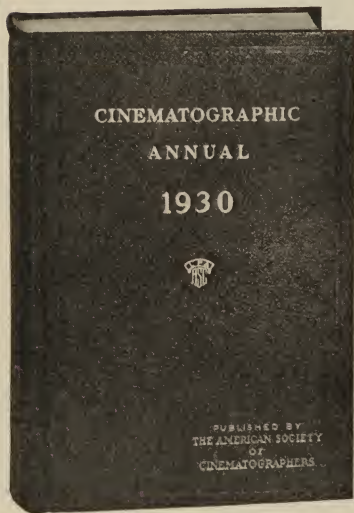
"Undoubtedly, if such a system as this is successful, it will prove of considerable importance in not only the fields of theatrical production and exhibition, but particularly in the industrial and home-talkie fields as well."

## Smallest Talkie House

L. C. PEARSON of the Northern Electric Company, which is the Canadian offsprung distributing Western Electric Sound Systems in the Dominion, receives credit for bringing in a contract for an installation in what is believed to be the smallest theatre in the world. The house is the Crescent at Temiskaming, Quebec, and seats 240. It is patronized almost entirely by employees of a pulp and paper company whose plant is located there.

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## Measurement of Density

(Continued from Page 15)

### Conclusion

We shall not attempt to discuss the significance of these data in any detail, but wish only to point out one or two matters of interest.

A factorial difference in density determination results in a factorial difference in gamma. If the reproducer measures a gamma value 1.3 times higher than that determined by sensitometric methods employing diffuse densitometry, an audible harmonic may be introduced.

Some other factor, such as reciprocity failure which makes the sensitometrically determined gamma higher than the negative sound track gamma, may partially or completely compensate for the effect of higher sound projection gamma.

A second effect resulting from higher projection gamma is a change in the shape of the toe of the H & D characteristic. The toe of the characteristic curve which is effective in the semi-specular reproducer system will be shorter than that of the curve determined by the diffuse densitometer.

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## Moviolas Now Available for All Film Sizes

FOR many years the standby of the film-editor has been the indispensable "Moviola" film-viewing machine. Since sound has entered the business of picture-making, several models of sound-equipped "Moviolas" have been evolved,\* facilitating the cutting of pictures with sound on film (single or double system) or disc.

Now that wide film is coming to the fore, the ingenious Iwan Serrurier, designer of the Moviolas, has perfected new models of the device, for all sizes of wide film. At the same time, he has also perfected several models of Moviola for 16 mm. film, which should find great favor, not only with individual amateur users, but especially with Commercial 16 mm. producers, and amateur cine-clubs.

\* See *The American Cinematographer* for January, 1930.

## Tanar Corporation Moves

CONTINUING their remarkable expansion, the Tanar Corporation is now moving into new quarters at 5357 Santa Monica Boulevard, with their laboratories at 1110-1112 North Serrano Ave., Hollywood. The entire ground flood of more than 6000 square feet of the building have been taken over. Next month we'll have pictures of it.

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# Making "Whoopee" with "Inkies"

by FAY LAWRENCE

"The technical data of this article was furnished me by WM. O. MELLOR" . . . F. L.

UNTIL recently, the motion picture industry was unanimous in the opinion that natural color, musical pictures were passe. But with the release of Samuel Goldwyn's latest production, "Whoopee," starring Eddie Cantor, this opinion has undergone an abrupt bouleversement. For "Whoopee" is an all Technicolor, musical production—and a sensational success. Unquestionably, this film is the finest all-color production yet released, and as such is a personal triumph for its director, Thornton Freeland, and its cinematographer, Lee Garmes.

The remarkable lack of the blurriness heretofore noticeable in color runs is undoubtedly due in no small measure to the careful placement of the lighting equipment used. As is well known, the color process used in making this picture requires an increase of approximately 50 percent, in the intensity of the illumination used. Thus it may be understood that the problem of lighting was highly intricate, requiring a thorough knowledge of lighting, and a delicately balanced sense of values. Furthermore, it demanded a highly unusual variety and efficiency of lighting equipment. Mole-Richardson lighting units—both Incandescent and Arc—were used exclusively in the production; several special units having been evolved expressly for the purpose of securing certain of the unusual lighting effects introduced in the picture.

Some of the individual scenes were actually breath-taking in their beauty. The first ensemble dance number, for instance—the famous "Sombrero Number"—executed in the patio of a colorful ranch house, is noteworthy. Here the contrast of brilliant orange hues, delicate blue-greens, and soft browns forms a remarkably entrancing scene. The white walls

of the patio, the red tiles of the roof of the ranch-house, and the green of the surrounding shrubbery combine to create an appealing background. A tremendous amount of light was necessary to illumine this set so as to accurately reveal the coloring. A total load of approximately 21,600 amperes was used by a total of 325 lighting units, consisting of ninety-five overhead strip units, each using five 1,000-watt lamps; one hundred and ninety 24" sun spots, each using a 5,000 kilowatt globe; and forty 36" sun spots with 10,000 kilowatt globes.

This scene is followed by a spectacular shot, straight down above the combined chorus, executing a unique circle dance.

One receives the odd impression of viewing a great, circular blossom of unearthly origin that opens and closes its petals with swift regularity, suddenly to dissolve into a writhing, living mass of color—and as quickly, to form another beautiful pattern. These effects are cleverly achieved by the synchronizing movements of the dancers and their manipulation of large, white sombreros. It is a gorgeous, circular kaleidoscope of contrasting colors. To illuminate this scene sufficient overhead was used plus fifteen 10 kilowatt lamps and fifteen 5 kilowatt lamps, low on the hot side, with seven 5 kilowatts on the shadow side, diffused to give roundness.

The film continues to unfold scenes worthy of the attention of every technical man in the industry. A particularly beautiful one is a balcony love-scene between Paul Gregory and Elinor Hunt. Color and lighting are at their best here. Every element is natural, the flowers in bloom on the trellis-work of the balcony, brilliant, red blossoms against dark, green leaves, (Continued on Page 45)



A striking scene from "Whoopee"



by WILLIAM STULL, A. S. C.

#### Stills From Cine Film

THE AMATEUR movie maker rarely has any time to even think of stills while he is making his motion pictures. Yet how frequently will he, while running his films, exclaim to himself, "How I wish I had a still of that!"

Well, why not? Moving pictures are nothing more than a collection of individual still pictures, so why not select one of them and make a still enlargement from it? There are several devices available for this purpose—and even if there weren't, ordinary projectors and enlargers would do the trick.

The first requisite naturally is a suitable "frame" to enlarge. This, in the first place, should be free from such physical imperfections, as scratches, abrasions, and so on. Then, it should be properly exposed, and rather on the contrasty side: softness, or flatness makes a very poor enlargement. The image should be crisply focused, with as much depth as possible, and, above all, the grain should be as small as possible. Finally, the subject should be caught in such a phase of movement as will make an interesting and attractive still picture.

Having selected the "frame" to be enlarged, the next consideration is the method of making the enlargement, and the best size of enlargement to make. Inasmuch as the picture on a 16mm. film is so small, it is unwise to attempt to make a still negative larger than approximately  $2\frac{1}{4} \times 3\frac{1}{4}$  from it. It is true that in projection the same tiny frames are enlarged vastly more, with no apparent ill effects, but there are two factors which make this possible. In the first place, the projected image is in motion, and our interest is concentrated not on the photographic perfection or imperfection of the picture, but upon the action that is taking place on the screen. Furthermore, the projected picture is viewed from a distance of several feet—from which the details of minor technical imperfections are not readily visible—while still pictures of snapshot size are usually viewed at a distance of a few inches—from which every detail (good or bad) is instantly discernible. Therefore, though a 16mm. frame may be enlarged as much as five or six hundred times in cinematic projection, an enlargement of around seventy diameters is the maximum generally allowable in making still pictures. This maximum is represented by the  $2\frac{1}{4} \times 3\frac{1}{4}$ -inch dimension previously referred to.

#### The Enlarger

The most logical method of making enlargements from 16mm. film is to employ one's regular projector, for the projector is, in effect, nothing more than an enlarger equipped to project enlarged images from the cine "frames" in rapid succession. Therefore if it is equipped with some means for preventing the intense heat of the projection light from damaging the motionless film in the aperture, it may quite naturally be used as an enlarger. The manufacturers of some projectors (notably the "Filmo" in this country and "Bol" in Europe) have recognized this, and devised special attachments for their machines which make enlarging simplicity itself. But those who do not own such outfits may easily adapt their present machines to such service. The most obvious requirement is some sort of an easel, or other support for the film or plate upon which the enlargement is made, which will

be in the proper position relative to the lens, and absolutely parallel with the plane of the film in the projector. Any inaccuracy in this will tend to destroy the definition in some parts of the enlargement. Inasmuch as most projectors disperse some light in all directions, it is best to cover the projector with a black cloth while enlarging. Similarly, it is advisable to check the evenness of the illumination received by the easel before starting work.

In using the "Filmo" projector and its enlarging apparatus, a point to be remembered is that the more powerful "45-50" condenser used for Kodacolor projection is not advisable for enlarging, as it concentrates so much light upon the film that over-exposure, and in consequence, flatness, results. The best results are obtained with the less powerful "F5-50" condensers with which these cameras are usually equipped, or, if the other must be used, by reducing the intensity of the lamp appreciably.

Naturally, most "still" enlargers may also be used for this work, although, since they do not have any provision for handling the long rolls of film, or for moving it frame by frame past the aperture, they are not nearly so convenient to use. There are, however, several enlargers made for making enlargements from standard 35mm. film, as used in the "Leica," "Q-R-S-deVry" and "Anasco" "Still-film" cameras, which may very conveniently be used for enlarging from 16mm. films as well.

#### Making the Enlargement

There are three methods that can be used in making still enlargements from cine film. The first is to make the original cinematographic picture on negative film, then making an enlargement directly from this negative, on Bromide paper, in the usual manner.

The second is to use the ordinary reversal film, but to make a negative from the reversal positive, by contact printing, subsequently using this "dupe" negative for enlarging as above.

The third method is, in all ways, the most practical. This is to use reversal film—or a positive print made from a negative, in the ordinary way—and make an enlarged negative from this, making the enlarged prints from this, by contact. This has the great advantage of giving an enlarged negative, from which prints may be made at any time, by contact, without any further trouble over enlarging. Furthermore, from this enlarged negative, it is frequently possible to make still further enlarged prints with much better results, and less trouble, than if the additional enlargement were made from the original 16mm. "frame."

In making these enlarged negatives, the users of the various enlargers which are accessories to projectors usually are confined to the use of film packs. Of course, any brand of film-pack may be used, but it is as well to use whatever brand the manufacturer of that particular enlarger recommended, inasmuch as the shutter action on the enlarger is usually timed to give a perfect exposure upon that particular emulsion. In any case, however, the film with the finest grain is preferable.

The users of other enlarging devices, however, may have quite a considerable range of sensitive products to choose from.

(Continued on Page 41)



# ... in which John Arnold's Filmo does a 35 mm. size job!

*John Arnold, A. S. C., with his Filmo 70-D*

JOHN ARNOLD, mainspring of the Metro-Goldwyn-Mayer Camera Department, has a bump of curiosity as big as the "bungalows" he originates. An inveterate (and successful) experimenter, he uses his Filmo camera constantly in his more or less private searches for new angles on cinematography and cinemachinery.

"I get a lot of fun out of my Filmo, but I do a lot of experimentation with it, too, at a whole lot less cost than if I used standard film," says Mr. Arnold.

Mr. Arnold's interest in Filmo extends beyond his own researches into the use made of this camera by other film colonists. Among his interesting discoveries is the fact that newly arrived actors and actresses, all ardent Filmo fans, are using their cameras in learning how to time their movements when they face the big Bell & Howell's in the studio.

The "professional amateurs" who use Filmo — and they are many — turned naturally to this camera, guided by years of experience with the big Bell & Howell. Precision is its middle-name, and, while not so simple to operate



*Filmo 70-D—"Master of all personal movie cameras." Seven film speeds, three-lens turret, variable viewfinder. \$245 and up in Sesame-locked Mayfair case. Other Filmos from \$92.00 up. Filmo Projectors, \$198 and up. Many Bell & Howell dealers offer convenient budget payment plans*

as your cigarette lighter, it doesn't miss it by far. Ask your dealer to show you the Filmo. Or write today for literature.

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Mr. MacKenna does some enlarging

IF PERSONAL photography could be reduced to a common denominator, that common factor would be the family Kodak. For although there are thousands who own cine cameras, everyone owns some sort of a still camera. Yet the majority of these camera-owners can hardly be called photographers even by the greatest courtesy, for photography, to them, consists solely of pointing the camera in the general direction of something or other, pressing a button, and—blaming the "finisher" for the inevitably bad results. They make no attempt to acquaint themselves with even the elementary principles underlying the operation of a camera; and the artistic side of photography is, to them, a closed—even unknown—book.

All of which is by way of introducing Kenneth MacKenna—one of Hollywood's "professional amateurs" who graduated from the "button pushing" class before he entered it. For Mr. MacKenna, coming from a family of artists, realized from the first that there was more to photography than mere snapshooting, and accordingly approached the subject with intelligently-directed enthusiasm.

"My real introduction to photography," he says, "came when I was called to Hollywood to do talking pictures for Fox. I'd played in several silent pictures in the East before, but as I was then dividing my time between the stage and the screen, I hadn't time to really study my surroundings in the studios. Out here, it was different. I settled down in Hollywood, and devoted myself entirely to not only making moving pictures, but to really learning how they are made. During my career on the stage, I'd managed to make myself intimately familiar with every detail of theatrical production, and naturally I wanted to familiarize myself with picture production in the same way. Of course, the most obvious difference I found was the introduction of the movie camera between the player and his audience. So I told myself that

# Professional

In Which We Present an

by WILLIAM

I'd have to begin by learning something about photography.

"But you know how it is when you are on a picture. You've not time for anything else. So I put off my start at learning photography more and more. Besides, I was so bewildered by the variety of amateur still and movie cameras available that I hardly knew which way to turn.

"Then one Sunday I went out to the beach with Arthur Hornblow and his family, and I saw Arthur's handy little 'Leica' still-film camera. It was so neat and compact that it interested me immediately; but, well, I couldn't quite see the value of making such tiny pictures as that little camera made—and I couldn't believe what Arthur told me about the enlargements he could make from them. But when we got back into town, Arthur convinced me by producing some pictures as big as 8x10 and even 11x14, which had been made from the tiny Leica films.

"The next day I got myself a Leica!

"I found that I'd made no mistake in getting it, for it enabled me to teach myself photography just as well as though I were using a big camera—and certainly at a far smaller cost. Considering the number of mistakes I made in those early days, that last item



One of Mr. MacKenna's stills

# Amateurs..

Amateur "Still" Man

STULL, A. S. C.

was important! The cameramen that I worked with on my various pictures gave me every help, too, for they were always willing to explain any point that I didn't understand.

"With their help, I soon managed to pick up a fairish understanding of the elements of photography. They gladly taught me all about exposure, lighting, and so on; and since my father and brother are both painters, and had given me some idea of composition, all I had to do was to learn how to adapt my knowledge of composition to the requirements of photography.

"So it wasn't long before I had become really interested in photography for its own sake. Then—like most other amateurs—I soon became dissatisfied at being able only to take the picture, and having to let someone else do the developing, printing, and enlarging that really completed the work. So the next time I went down town, I ordered a complete 'Leica' dark-room outfit.

"It came, a few days later, just as I was dashing out—late—to a friend's party. I had the various boxes, etc., taken up to my room, then hurried away for the evening. When I came home, much later, those boxes intrigued me. I couldn't rest until I'd opened them. So, although it was well after midnight, I dug out a hatchet, and set about installing my little laboratory. But by the time that I had gotten everything ready to use, I was so excited over it all that I naturally had to use it! So then and there, quite unmindful of the fact that it was more than a little beyond the wee sma' hours I made my first enlargement. The less that is said about



Mr. McKenna forgets acting

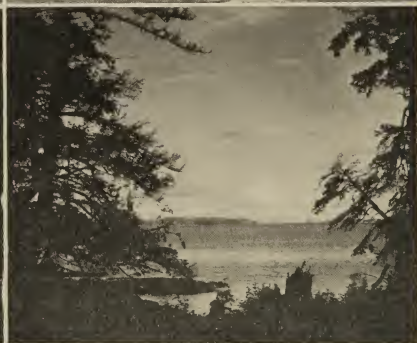
the first one, the better, for it was by no means satisfactory enough to let me go to bed and sleep like a sensible man. Nor was the next, or the next. But making them was so fascinating that I didn't want to sleep. Instead, I sat up and experimented all night, until by morning I had a collection of really nice

(Continued on Page 42)



Another of Mr. McKenna's stills





Upper left, Dawn on the Mediterranean.  
Left center, Sunrise in Italy. Taken at four o'clock in the morning.  
Lower left, Sunset in Alaska.

Upper right, Alaskan scene on a cloudy day.  
Right center, Venice on a cloudy day.  
Lower right, Another Alaskan scene.



# Cine-Kodak Goes on Alaskan Location

by JOHN W. BOYLE, A. S. C.

WHEN a man's business is that of making motion pictures for the amusement of the rest of the world, he seldom has much time to think more than momentarily of anything else, even himself. Therefore, although I have used a 16mm. Cine-Kodak for many years, I've confined my amateur activities to the routine subjects found at home, and among my friends. And though I've often seen things around the studio and on location while I've been working, which I've longed to secure for my home library, I've never carried my amateur cinematic interests into my professional work.

However, this summer, something happened which changed my point of view. I had decided that I'd spent quite enough time working on hot, sound-proof stages, so I sought out productions that were to be made in the well-known 'great open spaces.' I joined the R-K-O Camera Staff, and immediately had the good fortune to be associated with Karl Struss, A. S. C., in charge of the photography of their big railroad 'special,' "Danger Lights," which was made both in standard 35mm. film and wide film, using the Spoor-Berggren 63mm. process. Our locations were along the main line of the Chicago, Milwaukee, St. Paul and Pacific Railroad, and during the six weeks that we were out we lived in a de Luxe special train, among some of the most beautiful scenery in America. The combination of this scenery and the fascinating novelty of our intimate contact with the railroad activities soon had me wishing I'd brought my Cine-Kodak along. But it remained for one of our sound engineers to have done it. When we returned, he had made a very complete record of our trip, in all its aspects, from scenes of the boys bathing in the icy waters of the Missouri river to our 'Special' pulling into Chicago. After seeing his film, I decided that wherever my next location might be, I'd take my Cine-Kodak along and make my own record of the trip.

Two weeks later, I was assigned to the company going to Alaska, to make "The Silver Horde." That clinched it! Alaska is one of the few places on this old globe that I hadn't seen and photographed, so my Cine-Kodak was surely going along! I laid in an ample stock of Panchromatic film, got some new gelatine filters, and was off. I make a practice of keeping a K-2 gelatine filter mounted just in front of the front combination of my lens all of the time. Of course, occasionally there are times when a K-3 or a G filter is preferable; but the matter of changing filters is very simple. Very early in the morning, and very late in the evening, when the light is weak, and quite yellow, and your 1.9 lens must be used wide open, no filter is necessary. But as a general rule, I try to photograph all of my

shots through filters. On our departure from Seattle, the weather was fairly good, and as the Pacific Fleet was in port, we had a more than usually interesting background. The Inside Passage was very interesting, and worthy of considerable footage. It reminded me strongly of the Inland Sea of Japan, except that the islands were more mountainous, and the channel generally narrower.

As our object was to reach Alaska at the height of the Salmon season, we found much interesting activity to photograph, both professionally and personally. The methods used in trapping the fish, both in the large, stationary traps, and in the floating ones, are worth a complete picture in themselves, and offer plenty of action—and some interesting sound, too. The traps are huge affairs, and have to be emptied—"brailed," the fishermen call it—at certain times during the day. Since there is an eighteen foot tide in this part of the world, the fishing operations require a great deal of skill and efficiency. Then there is the possibility of getting some really spectacular scenes of the salmon going up the streams to spawn. Of course, I had read how these fish rush up the rivers in literal droves, leaping over roaring waterfalls, and so on, but until I actually saw them doing it, I had never fully realized what a remarkable spectacular performance it is. It makes an unusually interesting film, particularly if you have some moderately long-focus lenses, so that you can get fairly big images of the fish, yet remain yourself out of reach of the spray from the falls. The operations of the canneries, themselves, are equally interesting. All of the canneries are large and sanitary, and in many instances so well illuminated by natural light that it is possible to take interiors at a stop no greater than F:2.3, with the camera running at normal speed.

The people of Alaska are very hospitable, and—which is even more important to a photographer—they are "picture minded," and will go well out of their way to help a fellow secure a picture. The towns are full of interesting sights, from Totem Poles to Indian villages—to say nothing of the many picturesque native characters. At one of the villages where we

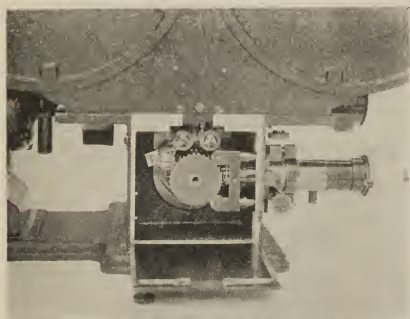
worked, the houses were all built over the water on piles, with narrow, wooden walks serving as streets. And these were by no means only the poorer parts of the town, but even parts of the business district. It is certainly a queer sensation to be walking along in front of really respectably big business buildings, and realize that they are all supported on piling, and stand, perhaps, in five or ten feet of water at high tide! In another town where we worked, the traffic problem was almost like that of an Ameri-

(Continued on Page 46)



Human and other totem poles at Wrangel, Alaska.

# New Portable Recorder for Double System



Front view recording head

THE HOLLYWOOD CAMERA EXCHANGE has just announced an entirely new, portable sound recording system for which they are the sole agent. The outstanding feature of the new system is that it uses the double-film system as used in the studio recorders. The recorder is an entirely separate unit from the camera, both being driven by synchronous Direct Current motors, operating from "B" batteries. This is believed to be the first installation to successfully use Direct Current, battery-powered motors in absolute synchronization.

The electrical equipment of this new recording system is unusually complete, yet compact. The microphone is of the condenser type, and the amplifier is a four-stage, direct-coupled design, with a gain in excess of 100 decibels. The whole amplifying unit, including the microphone, headphones, spare recording lamps, and all necessary equipment except the batteries, is assembled in a carrying case measuring 17" high, 11" wide, and 10" deep. The batteries are in another case, while the recording head fits into a third.

The recording head is of cast aluminum, and uses standard Mitchell magazines. It is fitted with a footage-meter, tachometer, speed controller, and a switching arrangement which permits the use of either camera or recorder alone, or of the two together, in synchronization. This sound system, of which the Hollywood Camera Exchange is sole agent, has been worked out by Hollywood engineers with years of experience, according to Art Reeves and Cliff Thomas, heads of that organization.

## Russian Travel and Educational Films Made Available in 16 MM.

THE EXCEPTIONAL quality of Russian travel and educational films thus far introduced into this country has aroused widespread favorable attention from American film critics, educators, and the motion picture world generally.

Thus far the presentation of Russian pictures, except for a few features like "Potemkin" and "The Fall of St. Petersburg," which enjoyed runs at Roxy's Theatre in New York City, has been limited to some of the smaller movie houses in the larger cities, due to the fact that the general theatrical

market has not been favorable to full length films of this nature. Consequently, some extraordinarily fine films have been inaccessible to the American public generally and especially to the home, church, and school fields where such material is most desirable.

An effective remedy is now offered by the Bell & Howell Company which has prepared one and two reel versions, on 16 mm. film, of some of Amkino's best productions.

Among these new Bell & Howell releases is a two reel picture of life among the primitive family tribes of a tiny, forest people, the Ussurians. Their mode of getting a living by skillful hunting and fishing, their social division of labor between the sexes, and finally the influence of Western civilization in bringing commendable changes to these backward, simple people are arrestingly portrayed. One of the most interesting moments shows the excitement of a native when he sees himself in the movies for the first time. This film, which is entitled "Taming the Taiga," ranks with the best



Amplifier and microphone of new portable equipment

socio-naturalist films and is of compelling interest for home, school and church showing.

Another of these releases is the one reeler "Hunting and Fishing in Siberia," which is of special interest to the lovers of unusual sport and travel films and which includes the killing of a giant bear by a native single-handed and armed only with a spear.

A third release is a one reeler on Afghanistan, reported to be the only motion picture ever made with the consent of the Afghan authorities. The extremely primitive methods of agriculture are plainly and interestingly shown, likewise the towns and their crowded bazaars and busy handicraftsmen; also camel, elephant, and buffalo transport; ruins of ancient temples and, then, the surprising forced-draft of modernity introduced by the ill-fated King Amanullah. Travel interest, humor and educational value are skillfully blended.

Have you ordered your Annual?

## Amateur Movie Making

(Continued from Page 34)

While film packs are hardly suitable for use with ordinary enlargers, or with projectors individually adapted to such service, there is an almost unlimited range of cut-films and plates available. Almost any good, slow, Orthochromatic emulsion will do; speed and color-correction being, naturally, of no importance. Speed is, in fact, somewhat of a disadvantage, inasmuch as the grain increases out of all proportion to increases in speed. Users of plates will find that the special "Lantern-Slide" plates will be excellent for this sort of thing, while the various "Process" emulsions will also give good results, especially where particularly snappy, contrasty results are wanted.

In printing from these enlarged negatives, the whole vast range of printing and enlarging papers is available, making the choice of a printing surface a matter for individual decision. However, it may well be remembered that the rougher surfaced papers are decidedly the best for this use. Perhaps the best results come through the use of the so-called "silk-finish" or "linen-finish" papers, on a buff stock.

Sometimes it happens that one wants to enlarge scenes from his older films, which are often scratched from much use. In this case, the best thing to do is to clip out the selected frame, and make the enlargement with an ordinary, vertical "still" enlarger, using a glycerine sandwich. By this means the various abrasions on the film base can be almost completely concealed. This is done by immersing the film in a liquid of the same refractive index as that of the film base and gelatine-emulsion; in this case, either glycerine or turpentine.

The so-called "liquid sandwich" is made this way. Pour a little pool of the liquid—in this instance, let us say glycerine—upon the bottom glass of the negative-carrier of your enlarger. Then lower your strip of film—not more than four or five frames long—into this pool, emulsion down, until all of it is in absolute contact with the glass and the liquid. Then pour another pool of glycerine out on top of the film, and slowly lower the cover-glass upon it. This completes the "sandwich," which should then be placed in the carrier of the enlarger and used. Obviously, it is suited only to use in a vertical enlarger. Inasmuch as the film is so small, and can hardly fill the full area of the carrier, it is a good idea to place a mask over it, to cut unwanted light and prevent fogging of the plate or paper upon which the enlargement is being made.

## Filmo Topics

THE November issue of Bell & Howell's wonderfully interesting monthly publication, **Filmo Topics**, should be very worthwhile to the users of 16 mm. cameras. This publication will be mailed free to anybody who simply writes to the Bell & Howell company at 1848 Larchmont Avenue, Chicago. It is a splendid little publication, packed with useful and interesting ideas and information. The contents of the November issue below:

FILMING AN ARCTIC EPIC, THOMAS B. SWEENEY, JR.

The annual seal hunt off the coast of Labrador.

YOUR THANKSGIVING PARTY IN MOVIES. How to produce family gathering films of lasting value.

STILLS FROM YOUR MOVIE FILMS.

CHRISTMAS CARDS FOR MOVIE MAKERS. Several ideas used by Filmo owners.

TITLING YOUR FILMS. 2. Preparing title cards for filming—various methods illustrated and explained.

CHRISTMAS GIFT SUGGESTIONS. What the movie maker expects of Santa Claus.

ACTION AT THE APERTURE, JOSEPH A. DUBRAY. No. 11 of the "Facts about Filmo" series, explaining the operation of the intermittent mechanism of the Filmo Projector.

QUESTIONS AND ANSWERS, JOSEPH A. DUBRAY.



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## ACTION!



HERE we see Colonel Wm. G. Stuber, President of the Eastman Kodak Company, in the garden of his home at Rochester, N. Y., making movies of his grandchildren, Marjorie and William James Stuber, with his Cine-Kodak.

## Professional Amateurs

(Continued from Page 37)

prints to show. "Since then, I've been learning more and more about my new hobby, and enjoying it more with each mistake and each success. Arthur Hornblow has shared my dark-room with me, and together we've spent hours working with our enlarger, trying to get new effects and new compositions from our old negatives, trying new papers, new formulas, and everything else that a couple of enthusiastic amateurs can think of.

"I've become quite rabid on the subject of making big prints from small negatives. And why not, after all? If your camera will give you a really first-class negative, and you take sufficient pains in enlarging, you can not only get as good an enlarged picture as though you had used a big camera in the first place, but often a decidedly better one, for in enlarging you have almost unlimited possibilities of control. Besides, the enlargement will give the picture a certain artistic softness that cannot be imitated in a contact print.

"Besides, there is so much in favor of using a small camera in the first place. For one thing, you can, with a 'Leica,' use regular motion picture film, which gives you the identical Panchromatic emulsions that the professional cinematographer uses, and which are not available in any other form. Then, too, you can use a small camera in so many places where you absolutely cannot use a big one. This is something that should commend the small camera not only to amateurs, but to professionals, as well. Since I've had my little camera, I've been religiously preaching that idea to still men on my pictures; but although many of them have individually and personally agreed with me, I can't say that my arguments have made any great impression upon the official conduct of the studio still departments! But I did have one wonderful opportunity for proving my contentions. That was on Fox's submarine picture, 'Men without Women.' This film, you know, was made with the co-operation of the U. S. Navy, who placed several destroyers and submarines at our disposal. One sequence was actually photographed inside a submarine, under water. Now, even in the biggest of subs, space is distinctly at a premium—

and this wasn't by any means one of the big ones. So there was no room for the big 8x10 cameras of the still men; but it was easy enough to slip the little 'Leica' into my pocket and snap as many pictures as I wanted. I took the roll home with me when we quit the location, developed it, and made some really fine enlargements from it. Then I was able to exhibit them to the still crew, as definite proof of the value of a tiny camera like that in emergencies on a movie-set. The boys were so enthusiastic that they finally persuaded me to let them have the negatives of those pictures, and I've since understood that prints from them went out as part of the regular set of production stills on the picture.

"While I've not yet taken up 16mm. movie-making (though I'm getting nearer to it every day), I believe that such small still-film cameras as the 'Leica' are the answer to the amateur cinematographer's need for stills to go with his movies. They are so small, so simple to operate, and will produce such excellent enlargements that I don't see how they can be left out of an amateur movie-maker's outfit.

"Besides, these tiny still-film cameras can be carried about with one almost everywhere, without being noticeable or burdensome. And if you carry a tiny camera such as this about with you regularly, you will soon find yourself seeing the world with an entirely different eye. You will be constantly seeing pictures in the ordinary scenes and happenings of daily life. Thus you will find yourself changing from just another snapshotter into, well, hardly an artist, but certainly into someone who has the desire to make his prints really count as pictures, rather than mere records. You'll begin to think lighting, chiaroscuro, and composition in connection with even the most ordinary snapshots, just as the studio cinematographers have to; and you'll be thinking, not only of the individual subjects as potential pictures, but of the viewpoints and conditions which will make them the best pictures. And once your thought gets started in that direction, it rests solely with you to make your pictures really worthy pictorially.

"You can say much the same about enlarging, too, for with the possibilities you have of control, through using only part of the negative, dodging, and double-printing, you have



## New Bell & Howell Bright Screen



FROM the Bell & Howell engineering laboratories has come a remarkable new screen, which is now ready for delivery. Its unprecedented reflective power and its fine texture make it ideal for projecting Kodacolor pictures, and it also gives black and white films a new rich beauty. It is surprisingly light in weight, making for easy handling and transporting.

This dual purpose screen has a double frame. The outer frame is attractively finished in brown walnut. On the narrow, black finished inner frame, the fine textured, projection surface is mounted. For use, the inner frame is easily unsnapped, lifted out, reversed, and replaced. Then, when the show is over, the inner frame is removed and replaced with its projection surface facing in for protection from dust, dirt and abrasion when in storage.

Two swinging feet on the base support the screen upon a table, and may be turned to lie against the frame for compact storage.

The projection surface is a composition of several metallic elements in extremely finely powdered form, held in suspension in a binding solution and applied to a 14-gauge sheet aluminum base by a special Bell & Howell developed process. When necessary, this surface may be dusted lightly with clean, soft cheese-cloth. Should the surface, after long use, become unduly scratched or marred, the aluminum sheet may be removed from its frame and refinished at the Bell & Howell factory at nominal cost.

a chance of making real pictures out of even rather ordinary negatives. And, too, the business of making the enlarged prints is such good sport. You can work over your enlargement just as a painter works over his picture, until you get exactly the effect that you want; you can put your own personality into your pictures, almost as truly as though you drew or painted them. People talk about the lack of control that the photographer has, in comparison to the painter, and of his lack of color: yet these same people will often revel in the beauty of a monochrome etching, or of a page of rare printing. To me, a fine photograph is equally a thing of beauty. For years, I have collected rare books, simply for the esthetic pleasure the beauty of their craftsmanship and printing conveys; now, since I have begun to learn something about photography, I have found that a perfectly made photographic print has the same exquisite, singing beauty that distinguishes a perfectly printed page, or a fine etching. Pictorial beauty is the same, no matter what medium is used to express it. So if there is anything that I, as an amateur, can say, it is that I wish that more of my fellow-amateurs could realize the possibilities latent in their family still-cameras, and in their most ordinary surroundings. If they'd only look for pictures in their every day life, they'd find themselves surrounded by pictorial beauty all the time."

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# Making Multicolor Two Miles Up

Elmer G. Dyer, A. S. C., Makes Unusual Aerial Color Films

by WM. STULL, A. S. C.

ELMER G. DYER, A. S. C., one of Hollywood's most outstanding aerial cinematographers, has been making tests for Multicolor in the air, and to top off his aerial tests with this color film he has just shot scenes at an elevation of ten thousand feet, the first time natural color has been shot at such an elevation, as far as we of this publication can determine.

Some of the observations of Mr. Dyer, who is under contract to Caddo, whose ally is Multicolor, are extremely interesting and follow:

"I'm glad that I've been able to do it," says Dyer, "not only because it is something I've been wanting to do ever since I started flying, but because the results have justified the confidence that Howard Hughes has shown in me in letting me have a free hand with these experiments.

"Black and white photography—no matter how perfect—can never give a true impression of the beauty of the scenes that are constantly revealing themselves to the eye of the flyer. You can capture the form of the various cloud-formations, of course, but you can't get the full beauty of it over without color. Black-and-white photography can suggest the beauty of some scenes you see above the clouds during the daytime, but it's a total loss when it comes to the beautiful, pastel tints of a sunset or sunrise above the clouds. Besides, in pictures of aerial 'dogfights'—like those in 'Hell's Angels' or 'The Dawn Patrol'—think of the pictorial possibilities of color, with a dozen or so brilliantly colored ships manoeuvring against the sky and great masses of snowy clouds. Then, too, the coloring will make it much easier for the audience to distinguish the individual 'ships' flown by the various characters.

"In our tests, we put the camera in one plane, and took off, while another ship—a Waco with a brilliant blue body, red-striped, and orange wings—went up with us to stunt a bit for my camera. The plan was that as soon as we got

above the clouds the Waco would come alongside us, fly beside us for a few moments, half-roll onto its back, hang there a moment, and then drive straight down to the clouds, so that I could follow it with my camera, and get some shots of the earth through the clouds. As usual, the manoeuvre was to be repeated several times, so that we could get plenty of interesting footage. After that, there were to be a few loops, Immelmans, Wing-overs, and a spin or two, all of which would give us some plenty interesting action, and give us a good idea of the use of color for such work.

"Well, things went according to schedule for a while. We filmed our own take-off, and then got a good shot of the other ship getting off, too. Then we climbed, and got into position. The first half-roll and dive went off beautifully; so did the second; but then the ship's engine went dead on him, and he had to make a forced landing in a beet field several miles from the airport. We circled around, as we expected that he'd be joining us in a few minutes, but he soon signalled that we'd have to go on without him. I was sorry to lose my subject—but otherwise I was plenty glad to get away; I was dressed for high-altitude flying, and it was awfully hot down there, a scant few hundred feet above the ground!

"But, as we started to climb, I got more and more thankful for my heavy, fleece-lined flying-suit, my heavy mittens, and the big leather face-mask I was wearing. By the time we got up above the clouds the altimeter registered 10,000 feet, and the bottom had dropped out of the thermometer. I was cold, even through my warm garments; and the oil in my camera got so cold and thick that the motor would no longer pull it; I had to crank it myself. And if you think that an ordinary, silenced camera turns hard down on the ground—just try it two miles up in the air, with the oil nearly frozen stiff! If

(Continued on Page 50)



Cloud formation 10,000 feet in the air

## Making "Whoopee" With "Inkies"

(Continued from Page 33)

bare, skeleton cactus plants etched against a marvelous sky of blue, the pure white of the girl's bridal dress—all blending perfectly into one extraordinary composition. Nothing is overdone. The general lighting was cut down in this scene due to the closeness of the shot. Lights consisted of 24" sun spots, ten duces and six rifles.

Undoubtedly one of the most beautiful shots ever made with color photography is the Mission Arch scene. The arch, silhouetted against a wondrous blue-green sky, forms a picture of rare, haunting charm. Lights from the ranch house filter through nearby trees to lay soft traceries of white upon the sombre brown of the arch. Figures clad in pink pour through the entrance, their arms brimming with gorgeous desert blossoms. The lighting effects ring up a grand score here. Full lighting on this set consisted of a total load of 12,860 amps, including sixty-eight 5 unit strips, as general overhead lights, one hundred and two 24" 5 kilowatt sun spots and twenty-five 36" sun spots. In order to emphasize the beautiful tones of green in the scene two 36" Mole-Richardson sun arcs, three 24" Mole-Richardson sun arcs and eight 80 amp rotary spots were used. Arcs were employed here due to the fact that the arc ray contains a greenish hue which is highly effective on green substances, therefore preferable, so long as it does not spill over and hit white, blue or red.

Many scenes taken on the Indian reservation set are particularly attractive. The instance where Cantor smokes the peace pipe with the chief contains a somber beauty—a composition of browns, ochres, oranges and reds. The total load here was 7,535 amps, consisting of thirty-eight 5 unit strips, thirty 18" sun spots, one hundred and one 24" sun spots and five 36" sun spots.

Introducing the grand spectacle, an Indian chieftain in full regalia stands silhouetted against an evening sky, traced with wisps of clouds tinted a delicate rose by the setting sun. This is perhaps the simplest, yet by all odds the most impressive scene in the entire production.

Comes the spectacle—a rhythm of moving color pouring down a great ramp,—white, cream, black, pale, salmon, orange, deep red, brown, green, blue—immense feathery, colored plumes, head-dresses for beautiful women astride stalwart horses. A magnificent scene illuminated with a total load of 18,170 amps consisting of one hundred and twenty-two 5 unit strips, one hundred and fifty 24" 5 K W sun spots, twenty-eight 36" 10 K W sun spots. On the backing thirty 36" 10 K W sun spots were used.

Throughout the picture sky vistas were greatly featured in backgrounds. This called for a particular type of light which was developed by Mole-Richardson, Inc., exclusively for this production. Forty of these new lights, aptly called "sky lights" were manufactured. All sky backings in "Whoopee" were lighted by these lamps, a 10,000 watt globe being used in each lamp. A special feature of the "sky light" is that it eliminates all light circles and dark rings. The beautiful cloud effects in the sky scenes were produced by bringing light up through the use of rheostats on 10 KW Sun spots.

"Whoopee" is a wonderful achievement in color photography and lighting effects. It sets a new high mark for excellence in color productions.

## Paris

IN THE populous Villette district of Paris, Leon Brezillon, president of the French exhibitors association, is erecting a large hall, which will be fully equipped for presenting sound-films on a wide screen. For the purposes of the enterprise, which is considerable, the Societe Secretan Palace has been founded, with an initial capital of four million francs. M. Brezillon will be president and managing director of the company.

## Emery Huse, A. S. C.



EMERY HUSE, another of the new Associate members of the American Society of Cinematographers, was born in Newburyport, Massachusetts, February 24, 1897. He was educated in Washington, D. C. in the public grammar schools, Central High School and George Washington University. When the war broke out Mr. Huse entered the Air Service. In January, 1919 he entered the Physics Department of the Eastman Kodak Company Research Laboratory where he remained until August of 1926.

At that time he was transferred to the Motion Picture Film Division of the Eastman Kodak Company in Rochester where he remained for two years. Then he was sent to Hollywood in March, 1928 for technical service work. At present he is Manager of the West Coast Division, Motion Picture Film Department of the Eastman Kodak Company, and is the Technical Editor of the American Cinematographer, as well as one of the members of the Board of Editors of the Cinematographic Annual.

## Nagel Cameras With Hugo Meyer Lenses

WE NOTE with interest that the Nagel Cameras are equipped with Hugo Meyer lenses which, to our way of thinking, represents as desirable a combination as it is possible to obtain. The Nagel cameras are characterized by their rugged yet light construction, their beauty of appearance and their ease of operation. And the fact that they are matched by a series of Hugo Meyer lenses makes the combination one that is highly desirable and one that should be very efficient.



## Cine-Kodak Goes on Alaskan Location

(Continued from Page 39)



Concentrator microphone of R-K-O used on "Danger Lights".

can metropolis, for while there were rather more than five hundred automobiles in the place, the city boasted exactly eight and three-quarter miles of road for them to use!

Alaska is in many ways a land of extreme contrasts, for while you will often see the most primitive of frontier conditions, they will invariably be hand-in-hand with the most modern aspects of civilization. Frequently, for instance, the fisher-folk will be found living in the simplest of frame homes, sometimes hardly more than shacks—but many of them are equipped with the most modern of radios! Incidentally, the larger canneries have their own radiophone systems for communicating with their "brailers," as they call the boats that bring the salmon in from the traps. Another interesting contrast—and one that is easier to photograph—is that shown by the varying systems of transportation. For on the one hand you will see proverbial dog-teams, and on the other, the fastest and most modern of airplanes. Aircraft, by the way, served us in good stead in our work, for they brought us to many remote, and otherwise inaccessible locations in only a few hours of flying. The major air services in Southeastern Alaska are operated by the Alaska-Washington Airways, who use the familiar Lockheed "Vega" cabin monoplanes, equipped with pontoons, which make all of Alaska's many coves, lakes and rivers ideal landing-fields. There is a decided satisfaction, by the way, in flying over such country in a seaplane, knowing that there is a landing field under you at all times! And it is certainly from the air that Alaska is seen at its best. For the whole beautiful coastline is stretched out below you, with its hundreds of islands, mountainous and wooded, its verdant mainland, dotted with fresh-water lakes where a fisherman can bag a limit catch of the sportiest fish in the world in an hour or two, and the blue

water of the famous Inside Passage stretching endlessly away into the distance. On many of the islands there are numerous black bear, and it is amusing to see the old Mother bear on the edge of some stream teaching her cubs how to catch salmon. Their method testifies rather plainly as to the size of the Alaskan salmon—runs, for they merely waded out into the river until the water is two or three feet deep, and scoop up the passing fish with their paws, and toss them onto the shore. This makes an unusually interesting picture, but it demands a long-focus lens, for Mother Bear is not picture-minded!

Alaskan weather, unlike the people, is not always so ready to co-operate with the photographer. In fact, nearly every day that we spent in the country was more or less rainy or cloudy. But, if the weather bureau wouldn't co-operate with us, we could at least take advantage of the prevailing weather to get pictures of the country in its natural state. This is something that any amateur can do; wherever he goes, in fact, he should do so, for, after all, a personal travel film is not intended to show the country the way it should be, but the way it is. Therefore, if you go right ahead, and shoot the country as it presents itself to you, rather than waiting for a theoretically "ideal" condition, you will find, as I did, that your scenes of the natural moods of the country are far more interesting than those sent out by the steamship companies to lure tourists to an apparent land of "eternal sunshine." Did you ever notice that most of the advertising pictures seem to have been made when the sun was at its brightest? But for a personal record, I found that filming the country in its varying natural moods was far more pleasing and satisfactory than just so many beautiful sunlit scenes. The ever-changing clouds and fog-banks made an unending variety of beautiful compositions. Between them, the half-concealed, snow-capped mountains and heavily-wooded hills, splashed with foaming waterfalls, make



Model dairy which was once a building on the magnificent estate Napoleon gave to Josephine near Paris.

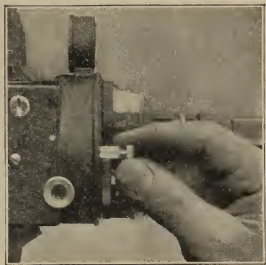
(Continued on Page 49)



At Wrangel, Alaska, during the shooting of the "Silver Horde".



## New Plunger Lock For Victor Model 5 Camera



VICTOR has added another refinement to the Model 5 Visual Focusing Camera. The Turret Front of the Model 5 is equipped with 3 knurled aluminum shifting pins which make it possible for the head to be rotated without touching any of the lenses.

One of these pins has been converted into a plunger lock, which prevents accidental or unintentional shifting of the turret, although it does not, of course, have any effect on the quality of the pictures made with the Camera.

The lock operates on the "push-pull" principle. To unlock, pull out the pin tip. When lenses have been rotated to the desired position, simply push the pin tip back in, thus locking the turret rigidly in place.

The Victor Model 5 was the first 16 mm. American Camera to be equipped with built-in Visual Focusing. Victor prism Focusing is unique in that the Focusing Finder may be instantly adjusted to the eyesight of the individual using the Camera—a feature which promotes accuracy and which has not yet been incorporated in any other 16 mm. Camera.

Another feature of this method of focusing to which the manufacturer calls particular attention is that the focused image is exact aperture size and shows all of the field taken in by the lens. The ground surface of the focusing prism is exactly the same distance from the lens as is the film when pictures are being made, an arrangement that obviates the necessity of using an internal compensating lens in the focusing system. In other words, the eye sees in the Victor finder the exact field that is transmitted by the lens to the film.

## Kodatoys

THE EASTMAN KODAK COMPANY has just announced a new projector which is just what hundreds of youngsters have been waiting for, and which should be one of the best Christmas presents any boy or girl could get this year. It is the Kodatoy, which is described by the Eastman Company as a dependable motion picture projector that any youngster can thread up and run.

The weight of this new projector, designed for the kiddies, is five and a half pounds. Footage is 100 feet of 16 mm. safety film, equal to 250 feet of standard 35 mm. film. It has a 34 mm. projection lens and is said to be easy to focus.

At La Garenne, just outside Paris, a new sound-film studio has been opened, which is to be let to producers. It is insulated by an American (Banroc) system, and equipped with Peterson-Poulsen sound recorders.

# Zeiss Tessar

No camera can be better than its lens. All Carl Zeiss Tessars ensure perfect definition and brilliancy, even at full aperture, and results will not be impaired by flare. These are only a few reasons why Carl Zeiss Tessar Lenses have universal endorsement



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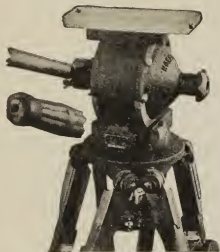
## Bell & Howell Company Awarded Medal By Chicago National Air Races Officials

THE BELL & HOWELL Company has been awarded a bronze commemorative medal in recognition of co-operation in connection with the record-breaking National Air Races held in Chicago recently. The medal was awarded by the officers and directors of the Chicago Air Race Corporation.

Prior to the races, a Filmo Projector was used to stimulate interest in the coming aviation events by showing movies of last year's Air Races all through the Chicago metropolitan area. These pictures were shown several times daily during a 30-day period to various organizations with splendid results.

At the Air Races themselves, 16 mm. motion picture cameras were very much in evidence. All over the closely crowded seats spectators were to be seen using their Filmo movie cameras to make motion pictures of the air events. Aviation will unquestionably open up a vast field for making interesting motion pictures.

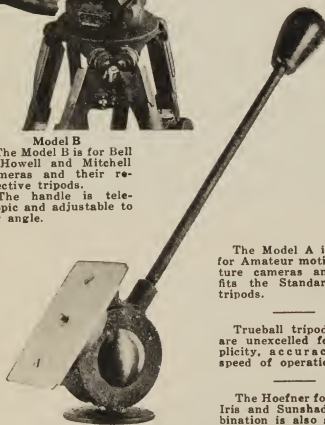
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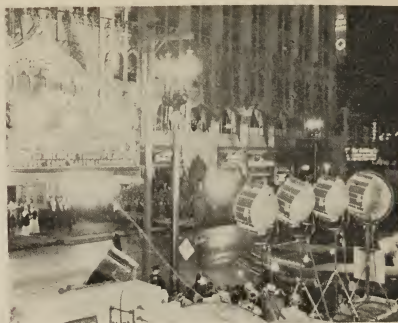
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"Laco Liteing" the "Whoopee" premiere

IT IS the night of an opening in Hollywood. Thousands of curious men, women and children jam the streets for blocks about the theatre. It may be the opening of any big picture at any theatre . . . the evening will be the same. The picture has been publicized . . . the director, the stars—even the featured players and perhaps the author . . . everyone is agog over the occasion. All are gathered to see the stars as they step from their expensive cars in their expensive clothes and walk through the glare of the great lights into the theatre.

There is one thought in the minds of the vast crowds . . . it is to see the stars.

But—back in the dark are a group of men who are never considered. The average person in the great crowd never gives them a thought. They are the men behind the big lights that make it possible for the crowd to see the stars—they are what, in the language of the studios are called, "juicers." These men are never given a line of publicity—but what would we do without them either in the studio or at the openings?

So—we tell you now that William O. Mellor, the chief electrician at the Samuel Goldwyn Studio was everywhere on the night of the opening of "Whoopee." He was directing the exterior lighting and had under him a great force of able men who never even dream of getting their names in the papers. But they did a good job. They made it possible for the stars to be seen. And, as the above picture of the event shows, he, his men and Laco Lites made a definite impression.

## W. E. Wins Patent Suit

IN THE first legal decision rendered on Patents 1707545 and 1734624, Judge Raymond of the U. S. District Court, Western District of Michigan Southern Division sitting at Grand Rapids has ruled that these patents are valid and have been infringed upon.

The action was brought by the Western Electric Company, which is sustained by the legal decision against the Kersten Radio Equipment Co., Inc., of Kalamazoo, Michigan. The patents cover the Western Electric loud speaker 555-W used for talking pictures and the diaphragm of this loud speaker respectively.

The decision derives additional significance from the fact that after Western Electric filed its suit in the fall of 1929, the Kersten Company offered for the consideration of the court another design of loud speaker modified in an attempt to avoid infringement. Judge Raymond's decision holds that both designs of Kersten's speakers are an infringement of the Western Electric Company's patents.

## Cine-Kodak Goes on Alaskan Location

(Continued from Page 46)

for a diversified reel of scenes. If one is ambitious, and rises early, there is always a composition of cloud-and-seascape that is worthy of a few feet of film, for the sun rises very early, and sets very late in these northern latitudes. We passed another steamer at about nine o'clock one night; it was still twilight, and by using the F:1.9 lens wide open, I secured a most interesting picture of the ship, which though perfectly timed, preserved the twilight atmosphere of the scene, and even showed the incandescent lights in the main saloon of the ship. On clear days (of which there really are a few), it is possible to get some beautiful sunsets at about ten-thirty in the evening.

But Alaska is not the only country which should be photographed in its native moods, rather than under the so-called "ideal" conditions. Every country should be. The tropics are an equally outstanding example. One often hears both professional and amateur photographers complaining of the extremely contrasty light conditions found in the tropics and the south seas. To my mind, these contrasty lightings are just as much a part of the country as the palm trees and coral. They are natural moods of the country, and should be photographed as such. Of course, this does not mean that one must resign himself to an absolute whitewash-and-soot type of picture, but neither should he go to the other extreme, and try for a perfectly-balanced film. Tropical sunlight, snow-white beaches, and heavily-shaded cocoanut groves are not conducive to a uniformly exposed negative, but they can be so photographed as to strike a happy medium between actuality and unreal, photographic perfection. By filming such subjects either early or late in the day, with long cross-lights, a very pleasant result can be obtained.

Similarly, what south sea reel can be complete without at least one of the torrential down pours that are so much a part of the country? In photographing one of these, a dark foreground should be used, by shooting through an open doorway or arch, into the dripping background, which should be rendered in a higher key. In such subjects, as in the moist weather of Alaska, color filters should almost always be used, not so much with the idea of securing better color rendition, but to aid in securing definite contrasts on days when the light is soft and diffuse.

The most interesting thing about photography is, to me, the fact that, whether one is an amateur or professional, or using a still or a movie camera, every day, every scene, brings something new to be learned. And this trip to Alaska taught me two things: the tremendous enjoyment of taking my Cine-Kodak on location with me, and the fact that the natural moods of a country are invariably more interesting as photographic subjects than the so-called "ideal conditions" for which most of us so foolishly wait.

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## S.M.P.E. Offers Film Ratio

(Continued from Page 16)

Among the papers read at the meeting were: "Meeting Sound Film Competition Abroad," by C. J. North and N. D. Golden of the Motion Picture Division, Bureau of Foreign and Domestic Commerce. "Microphone Concentrators In Picture Production," by Carl Dreher, RKO Studios. "Some Observations on Stereoscopic Projection," by J. B. Taylor, Research Laboratory, General Electric Company. "International Relations in the Sound Picture Industry," by Dr. F. S. Irby, Associate Editor, Electronics. "Some New Studio Recording Equipment," by W. P. Dutton and S. Read, RCA Victor Company. "Dubbing and its Relation to Sound Picture Production," by George Lewin, Paramount Publix Corp. "Some Suggestions for Eliminating Fire Hazard from the Handling and Storage of Film in Laboratories," by R. C. Hubbard, Consolidated Film Laboratories. "Double Toning of Motion Picture Film," by J. I. Crabtree and W. Marsh, Kodak Research Laboratories. "Condenser and Carbon Microphones—Their Construction and Use," by W. C. Jones, Bell Telephone Laboratories. "Improvements in Dynamic Speakers," by I. B. Serge, Utah Radio Products Corp. "A Damped Diaphragm Reproducer," by Rudolph Michling, Universal Sound System. "Aiding the Theatre Patron Who Is Hard of Hearing," by F. H. Graham, Electrical Research Products, Inc. "The Photoflash Lamp," by R. E. Farnham, General Electric Company, Cleveland. "A Truck Mounted Laboratory For Diagnosis of Theatre Acoustic Defects," by V. A. Schlenker, Vitaphone Corp. "Some Causes For Variations in the Light and Steadiness of High Intensity Carbons," by D. B. Joy and A. C. Downes, Research Laboratories, National Carbon Company, Cleveland, Ohio. "Requirements For A Practical System of Three Color Subtractive Cinematography," by Palmer Miller and P. D. Brewster, Brewster Color Film Corp. "Principles and Processes of Photography in Natural Colors," by Glenn E. Matthews, Eastman Kodak Research Laboratories. "Recent Developments in RCA Photophone Portable Recording Equipment," by P. M. Robillard and E. B. Lyford, RCA Photophone, N. Y. "Trend of Lamp Development and Operation in Motion Picture Projectors Employing 16 mm. film," by V. J. Roper and H. I. Wood, General Electric Co. "Cinematographic Analysis of Mechanical Energy Expenditure in the Sprinter," by C. A. Morrison and W. O. Fenn. "Cinematography With the Laryngoscope," by C. A. Morrison, Eastman Teaching Films. "Industry Adopts the Motion Picture Camera," by A. H. Mogensen, Assistant Editor, Factory and Industrial Management.

## Church Paper Conducts Motion Picture Department

SUCH extensive interest has been evidenced in the use of motion pictures in the church field, that the widely known religious magazine, The Expositor, has opened a questions and answers department to take care of inquiries from clergymen who desire information as to how to employ movies to the best advantage in their work.

This department is conducted by Ford Hicks, Vocational Advisor of the Bell & Howell Company, Chicago. Letters of inquiry have been received in considerable number from all parts of the country.

In addition to the questions and answers, The Expositor makes it a practice to carry, each month, a general article, usually about 1000 words in length, on some interesting phase of movies in the church field. Practically all of the material has to do with 16 mm. pictures.

J. M. Ramsey, Managing Editor of The Expositor, is himself a motion picture enthusiast of genuine attainments. He has written a number of articles on cinematography which have appeared in photographic publications, and he has also at least one movie appliance invention to his credit.

## A Letter from Hollywood

(Continued from Page 20)

"Nope, just starting a French picture," says the casting director, and the gang rush to the furnished rooms and apply the scissors and return with the nicest French beards in the world—then they eat—for if they are hired they get seven and a half bucks and that means a lot of ham and egg sandwiches out here. You can find any type of beard in the world right on Sunset or Hollywood Boulevard any day you go out.

And speaking of eating. You can't beat this town for originality and color. They have sandwich shops here where you drive up in your car and a pretty girl dressed in bare legs, slippers, and the most gorgeous yellow pajamas comes tripping gayly and laughingly to your car and takes your order. Then she brings your sandwiches and your coffee, and you can't eat for looking at the pajamas and what they contain. I've figured it all out, though. The other night I rode up to one of these places with a friend in his car. And you know, John, I stared so hard and long at the girl I forgot to eat, and when we left and I handed back my tray I gave her back the sandwich untouched. There's the answer, John. Look at the money they can make selling those same sandwiches maybe a dozen times a night. Well, as long as they can get away with it, more power to them. But them girls sure do knock your eye out—to say nothing of the pajamas.

But—getting back to getting a job. I think you had better stay back in Pittsburgh for a while. I'm figuring on growing a beard before long, only you know how I never could grow any hair on my chin. Well, that is about all for this time, John. Next time I want to tell you about the Hollywood cowboys who clutter up Cahuenga boulevard so you can hardly get by without slashing your shins on a spur.

As always, your determined friend,

JOE.

## Making Multicolor Two Miles Up

(Continued from Page 44)

that isn't enough, try using a friction trip-head in the same condition at the same time!

"But in spite of these difficulties, we got our picture, several beautiful shots of the tossing billows of the clouds below us, and, finally, a shot of the sun as it sank below the clouds. That two-mile-high sunset, I think, was one of the most beautiful scenes I've ever shot. There was the great, orange globe of the sun sinking below the horizon; the billowy ocean clouds in the foreground, gold where the sunlight hit the tops of the clouds, purple in the shadows; while above and around us the sky was a flaming mass of pink and gold and crimson. Such a scene could never have been made in monochrome, but in Multicolor it seems just as beautiful in the projection-room as it was that evening in the air.

"Then, for a final thrill—if we needed one, the glory of that sunset—came the dash back to earth. With the sunset, we knew that it would soon be pitch-dark below the clouds, so our pilot simply shoved the stick forward, and dove almost perpendicularly back to earth, through a hole in the clouds, and down into the dark world below. We dropped those ten thousand feet in about two minutes, levelled out, and raced back to the field, to sink back to earth just as the field landing-lights were turned on.

"The value of color cinematography for such scenes as these is rather obvious, but it is equally valuable for less spectacular work. For color gives a real sense of depth to aerial scenes. If you are above the clouds, the glimpses you get of the earth through the inevitable holes in the clouds makes you conscious of being really up in the air. If you are lower down, and shooting obliquely at the earth, color makes things stand out in their true relation. Not only do you feel that you are up in a plane, but you find that you can distinguish the different objects below you.



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